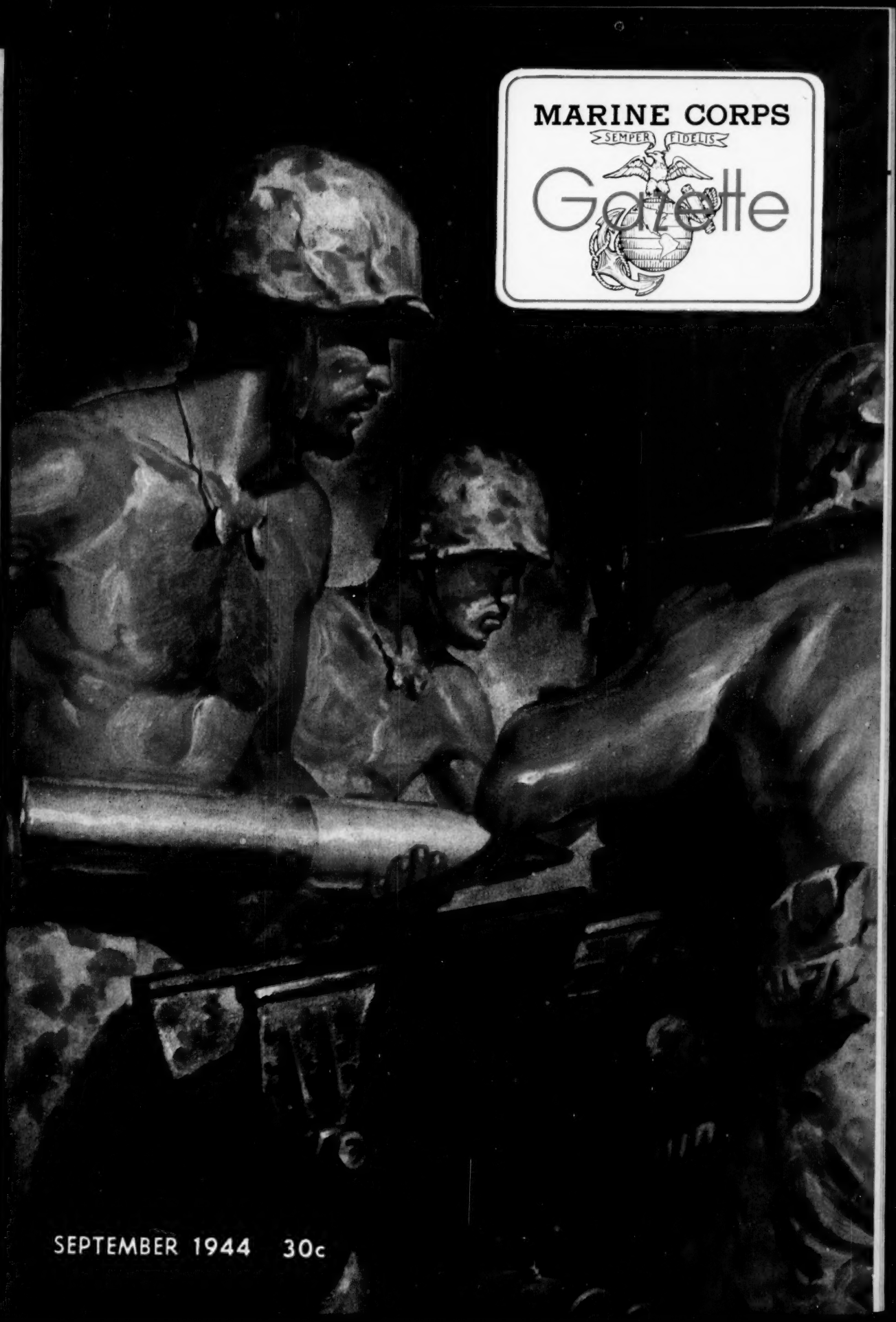
MARINE CORPS Gazette



SEPTEMBER 1944 30c

$500 PRIZE ARTICLE CONTEST

THE Editors of THE MARINE CORPS GAZETTE offer a prize of $500.00 for the best article on a military subject submitted before October 15, 1944. The contest is open to all Marines. Contributors are encouraged to write on subjects that grow out of their own military experience. Here are some suggestions, although the field is not limited to them:

——the narrative of a particular battle or campaign, told in professional manner.
——the account of activities, particularly in combat, of a particular ship or unit.
——analysis of strategic or tactical problems with which the author is familiar.
——discussion of a particular weapon or piece of equipment, and its use.
——consideration of problems of logistics.
——functions of a particular branch of service, as aviation or field artillery.
——observations on problems of administration, discipline, or the like.
——suggestions on ways of using weapons, equipment, or men more usefully.
——comparison of American methods with those of other allied nations, or the enemy.
——development of amphibious techniques.
——correlation of land, sea and air arms in attack or defense.
——problems of military government of occupied areas.

While only one prize is offered, the judges expect to accept a number of contributions and pay for them at the space rates.

CONTEST RULES

1. **SUBJECT:** any subject of current military interest, presented in article form.

2. **ELIGIBILITY:** Any Marine on active duty.

3. **LENGTH:** Approximately 2,500 to 6,000 words.

4. **ILLUSTRATIONS:** Where required, glossy prints of photographs and accurate sketches of maps or diagrams should be included. If necessary, the latter will be redrawn in finished form by staff artists. (Official Marine Corps photos on many subjects may be obtained through public relations officers).

5. **LEGIBILITY:** Where possible manuscripts should be typewritten, double spaced on one side of the paper. If typewriter is not available, legible hand written manuscripts will be accepted and no demerit given on this account.

6. **AUTHENTICITY:** All essays must be original and previously unpublished. Contributors are assumed to vouch for their authenticity, and supporting evidence may be required.

7. **IDENTIFICATION:** All manuscripts must bear at the head of the first page the name, rank and military address of the contributor. Subsequent pages should bear the contributor's last name and the brief title. All contributions should be clearly marked "FOR MARINE CORPS GAZETTE ARTICLE CONTEST."

8. **MAILING:** Manuscripts and accompanying illustrations should be sent under the same cover, by First Class Mail or Prepaid Express, addressed to CONTEST EDITOR, THE MARINE CORPS GAZETTE, 1121 14th St., N. W., WASHINGTON 5, D. C.

9. **CLOSING DATE:** The contest closes October 15, 1944. Entries must be postmarked not later than midnight of that date, and must be received at the editorial office by November 1, 1944.

10. **AWARDS:** Only one prize will be awarded: $500.00 for the article adjudged best by the committee of judges. Other essays may be given honorable mention and any published will be paid for at prevailing space rates. The prize essay and others accepted become the property of The MARINE CORPS GAZETTE and may not be reprinted without permission.

11. **RETURN OF MANUSCRIPTS:** Manuscripts not used will be returned upon request, after conclusion of the contest, provided return postage is enclosed. No manuscript should be submitted to other publishers until the original has been rejected or, if accepted, until permission to reprint is given.

12. The $500.00 prize winning article will be published in the January 1945 issue of THE MARINE CORPS GAZETTE.

13. Members of THE LEATHERNECK and THE MARINE CORPS GAZETTE staffs are not eligible to participate.

14. In case of a tie, duplicate prizes will be awarded.

SECURITY

All manuscripts must be cleared by authors through their local Security Officer and must carry the clearance stamp of the Local Security Officer before being submitted. Those not carrying this stamp will be rejected. Contributions from Marines stationed overseas that are not approved for security reasons will be automatically disqualified.

The prize winning article and other manuscripts accepted for publication will be cleared by THE MARINE CORPS GAZETTE through the Division of Public Relations, Headquarters, U. S. Marine Corps before publication.

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THE MARINE CORPS
THE PROFESSIONAL MAGAZINE
FOR UNITED STATES MARINES

Gazette

SEPTEMBER 1944

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★ ★ ★

THIS MONTH'S CONTRIBUTORS

LT. COLONEL J. D. HITTLE ("The United States Staff") has been a Marine since 1937, coming direct from college. During his four years at Michigan State he was on the editorial staff of the *Lansing State Journal* as a reporter and feature writer. In addition, for two years, he prepared and presented a daily news broadcast for station WKAR. As a Marine, he has been transferred up and down and across the U. S. A., has seen duty aboard the USS *Washington*, and is now attached to the Marine Corps Schools at Quantico.

CAPT. J. S. BURROWS ("Crash Crew in Action"), with more than 20 years' experience in the automotive industry, was a natural for the Motor Transport Corps when he joined the Marines in 1942. He is now with Marine Aircraft Wings, Pacific, following a tour of duty at Cherry Point. Capt. Burrows studied at the Illinois Institute of Technology. Six years' service in the Minnesota National Guard gave him experience in the field artillery.

CHARLES EDMUNDSON, as Associate Editor of *Fortune*, has covered the Marines, Navy, and Army at the front. "Until I saw troops in action," he says, "I never suspected that some men may be attracted by danger. I became interested in the anatomy of courage, and 'Why Warriors Fight' is the result." Edmundson once had a 24-hour interview with General (then Colonel) Eisenhower during the Louisiana maneuvers in 1941. General Eisenhower was still going strong long after Edmundson was exhausted. This snapshot of the author was taken en route to a raid on Marcus Island.

★ ★ ★

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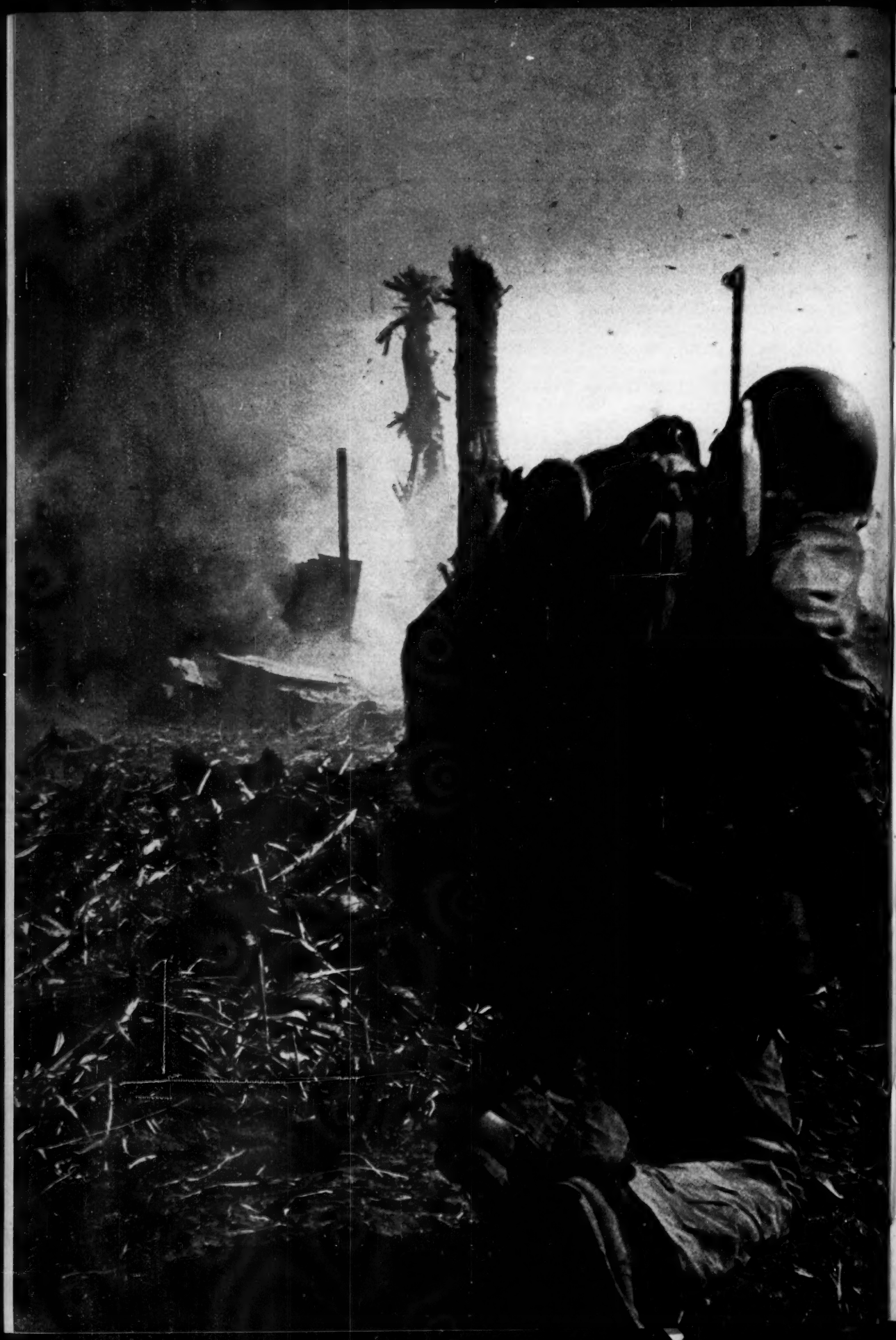


Why Warriors Fight

The impulse to kill, and the willingness to be killed, arise in men for many reasons. Most important of these are training and leadership, supported by a conviction that the battle is worthwhile. *By Charles Edmundson*

IMAGINE that you are a fighter in a light weapons company ready to assault a line of German or Japanese machinegun bunkers. You are lying flat on the ground, protected for the moment by a slight rise in the terrain between you and the enemy. But just above your head his guns are throwing a visible and audible curtain of lead, which thuds into the trees around you, causing you to wonder if it makes the same sound when it hits flesh. You tell yourself it is impossible for a man to penetrate that curtain of fire alive, yet in a moment the sergeant's voice will boom, "Let's go! You don't want to live forever!" But all you hear now is the clatter of the machineguns. The vision of the dead and wounded you saw on the way up to the front rises to plague you; your belly deflates and lies flat against your backbone, and all the gallant thoughts you had hoped to have at this moment are gone. You are naked and alone with the instinct of self-preservation.

At a time like this a soldier needs every kind of fortification that can be brought to bear. Some men meet the test with superb gallantry, some fight passing well, and some flunk out—freeze behind a clump of bushes or a fallen log and, when the enemy counterattacks, flee in disorder, leaving their rifles behind.

What is it that enables some men to take their lives in their hands and charge straight into enemy guns, and what is it that makes others fail? Officers have some definite ideas, which they try to put into practice, but they do not contend that the last word has been spoken. With Army approval, a number of topflight American psychologists are engaged in research for fuller answers.

Meanwhile on a half dozen fronts American youth is fighting. Units composed exclusively of volunteers are, as might be expected, fighting better as a rule than units made up of selectees, but neither type lacks for heroes. The public impression of their performance is optimistic, for the exploits of the heroes are, properly, blazoned on the front pages while the dark chapters never get into print. But the wonder is that the men are acquitting themselves so well—rising so far above their pacifist-isolationist upbringing.

"Who can blame these boys if they're not all heroes?" an intelligence officer at General MacArthur's headquarters asked bitterly after the Battle of Buna. "What 'indoctrination' they had was indoctrination in reverse. In 1917 and 1918 we said there were not going to be any more wars. After we got over that cockeyed idea we said, yes, there would be other wars, but we wouldn't be in them. And after Germany struck we switched again—but not for the better so far as morale is concerned. We would be involved, we admitted, but only to the extent of becoming 'the arsenal of democracy.' We would give the arms and ammunition; other people would give the blood. We didn't face the fact we were in the war—all the way in—until the Japs stuck a dirk in our ribs at Pearl Harbor. Well, men who've been taught for years that 'It's not our war' don't lose that impression overnight."

The boys have had to rise above other things than the various forms of the isolationist complex. They were not unaffected by the pert cynicism and brash materialism that cankered—perhaps still cankers—the rest of the country. Patriotism, because of its misuse by demagogues, had become a suspect word. One's country was not something to sacrifice for but to look to for bounties as free as rain. As one Pennsylvania recruit—a young lawyer—expressed it, "Everybody back there is still asking, 'What's in it for me?'" The nation was physically soft as well, taking its exercise vicariously at vast gridiron spectacles, and unhappy without hot baths, rich food, movies, motor cars, jive artists and juke boxes. If Americans at the front now demand more comforts than other armies and if they expect furloughs home after a year or so, it is only a conditioned reflex.

Bases of Courage: Training, Leadership, and Convictions

Men overcome their natural fear of injury and death and fight well for two chief reasons: First, they are well trained and well led and, second, they have convictions that will sustain them to the last sacrifice. Ideally an army should be well trained and led and fired by belief in a high cause; and the armed forces of the United States in this war have every right to be bulwarked both ways.

But contrary to what idealists would like to believe, training and leadership are more important than convictions. Without convictions but with good training and discipline, an army can still be powerful. But without professional excellence, no

← **"Just above your head enemy guns throw a visible and audible curtain of lead . . ."**

matter how deep the convictions, an army is likely to be a pushover. The German Army is an example. For many months now it must have been evident to the Reichswehr that the Nazi ideology is false, its dream of empire a fantasy, and its ultimate defeat inevitable. Since the Allies have stepped up their attritional bombing, the German soldier is not even fighting for the safety of his home and family. Yet his technical training and discipline have been able to maintain him, until recently, as the equal, man for man, of any soldier in the world.

In no modern war has any group fought with more unselfish conviction than members of the Abraham Lincoln Brigade in the Spanish Civil War. Their ideals were strong enough to cause them to leave the comfort and safety of their own country and fight Fascism on another continent. According to a recent study by Dr. John Dollard of the Yale Institute of Human Relations, these men agree that a comprehension of war aims made them better soldiers. "But," Dr. Dollard adds, summarizing their views, "the soldier in battle is not forever whispering, 'My cause, my cause.' He is too busy for that. Ideology functions before battle, to get the man in; and after battle by blocking thoughts of escape."

Impulses from the Subconscious Mind

Soldiers seem agreed that ideals are likely to fade from consciousness and give way to more elemental feelings when the moment of actual combat arrives. Herman Bottcher, the outstanding hero of the Battle of Buna, hated Fascism enough to go to Spain to fight it and to volunteer in the American Army the day after Japan attacked, but in the crises in New Guinea he responded to a more immediate form of motivation. Of his first exploit—single-handedly taking out a Japanese machinegun position—he says, "I suggested somebody should go out with hand grenades and take it—so we all stood around and looked at each other. Nobody seemed anxious to go—I know I wasn't—but after all I was supposed to be a veteran and was ashamed not to volunteer."

Part of the reason why men can advance headlong toward their own destruction lies hidden in the dusk of the subconscious mind. No rational explanation can wholly account for the suicidal courage which men frequently show in battle, either individually or en masse. The truth is that a fight to the death can be exhilarating, and in extremes of courage men rise above fear and conscious motivation and move in a new dimension. Danger—even danger involving certain death —exerts for some men a potent charm.

In the heat of battle one can always pick out men who seem to be moving under this strange

← **"What is it that enables some men to take their lives in their hands, charge ahead?"**

stimulation. Their speech is rapid and intense, and their minds are operating with abnormal clarity. Their courage is pitched at a level which may make them outspokenly impatient of the prudent pace set by the commanding officer. They volunteer again and again for the most dangerous missions—to lead patrols behind enemy lines, to rescue wounded pinned down by enemy fire, to infiltrate against a stubborn road block. Such a man may be wounded several times and still go on fighting, until, like Lieutenant William Dean Hawkins at Tarawa, he has lost so much blood the surgeons cannot save him.

They Face Their Fate

Whether he is killed or by supreme luck comes through, such a man is invaluable, for he does the impossible and he shows the way for others. Cautious soldiers are likely to call him "bomb-happy" or "battle-wacky," but without a certain number of his kind any army would bog down. To explain such courage, Sigmund Freud advanced the theory of a counter-force to the instinct of self-preservation. Freud assumed the existence of a "death instinct, the task of which is to lead organic matter back into the inorganic state . . . to re-establish a state of things which was disturbed by the emergence of life."

"The appearance of life," he said, "would thus be regarded as the cause of the continuance of life and also of the cause of the striving toward death; and life itself would be a conflict and compromise between these two trends." The idea is not original with the psychoanalysts but has been hinted at in literature since ancient times. It seems to have been in Keats' mind when he wrote, "Life is a dome of many colored glass that stains the white radiance of eternity until death tramples it into fragments."

Unless death does exert a subconscious compulsion of some sort, it is difficult to see how men can show for it the utter and deliberate disdain they do. Some fight with such reckless courage that they must know they cannot long survive. Some fliers go on day after day, pressing the attack where the flak is heaviest, never counting the number of missions they must make before they are entitled to a furlough home and duty at a training field. They are resigned to carrying on until their number comes up, and if they know you well enough they will tell you so quite simply.

"Hell," Butch O'Hara once told me, with the frankness that comes after a long talk through the night, "I wasn't kidding myself awhile ago when I was talking about what I was going to do after the war—there isn't going to be any after the war for me." The Naval air hero has now been dead for months.

Sometimes the decision of death is quick and short. One of the casualties at Enogai, near Munda, was a middle-aged Marine lieutenant named Benny Bunn. At a supply depot in New Zealand he had held the comfortable sort of position that Australian combat troops call a "furlined foxhole." But he was not satisfied. He bombarded his superiors with letters begging for active duty until he was transferred to the First Raiders. At Enogai his platoon was stopped dead by a Jap machinegun entrenched at the top of a coral bluff. All efforts to outflank it failed, although several men were wounded in the attempt. Soon Benny Bunn's patience was exhausted; as calmly as a pinch hitter might pick out a bat he chose a tommy gun and two hand grenades and started clambering up the bluff. Before he reached the top he was sieved with bullets, but his grenades and tommy gun took the post.

News from home is a factor in keeping the morale high, nerves at battle pitch.

When Death Is More Attractive than Life

In the Battle of Buna an Australian chose death just as certainly. He was captured by the Japanese in a patrol skirmish and tied to a tree near the front. A few hours later an Australian reconnaissance party stalked in that sector. The Japs set an ambush and waited. The prisoner saw what was happening and waited also. When his comrades were near enough to hear him but still far enough away to escape the trap, he shouted, "Go back, you fools! Don't you know you are walking into a trap?" When the Aussies captured that position the next day they found the prisoner's body. He had been mutilated and his eyes burned or stabbed out.

When men can perform with such self-destroying valor, death and what can be accomplished by it has become more attractive than life.

Besides the "death instinct" Freud assumed the existence of "aggressor instincts" inherited from a time when society did not operate under

Recognition in the home town paper is an incentive to bravery on the battle front.

the present (except for war) Marquis of Queensbury rules and a man expected to fight for the best food or shelter or for the woman he wanted to mate. Sublimated through countless generations, these instincts still exist under a veneer of ethics and etiquette. Under the your-life-or-mine pressure of battle the veneer cracks and lets men fight in savage fury.

In a highly civilized nation the veneer may become so thick it will not give way quickly enough for purposes of self-protection. By the time such a people are aroused enough to fight they may have become subjugated by nations less civilized. This is part of the explanation of what happened in France, Norway and the Netherlands, and it is perhaps fortunate that Great Britain and the United States were so placed geographically as to have time to recondition themselves from the pacifist overlay. It is dangerous for a nation to forget, as Justice Holmes put it, "that struggle for life is the order of the world, at which it is vain to repine."

Civilization tends to educate the combativeness and daredeviltry out of a youth. Most youngsters, if they come home with a black eye, a scratched face or clothes torn in a fight, are shamed and perhaps punished. Only an exceptional native tendency to fight will survive such treatment.

To counteract excessive concern for personal security and to overcome aversion to carnage the armed services have developed a whole series of training devices. Men are trained under fire, crawling under barbed wire entanglements while machineguns blast away just over their heads and dummy mines and mortar shells explode near enough to jolt them and shower them with gravel. Special films made in Hollywood and at the war front accustom men to the sight of other men being holed by bullets and bayonets or torn apart by shells. Bayonet practice consists in jabbing dummies, with imprecations deemed appropriate for a real enemy.

Once an influential group in the U. S. Army thought a soldier should be taught to believe that although others would be killed or wounded in battle he himself would come through whole. This attempt at self-hypnosis has now been abandoned, and soldiers are taught to expect losses according to the hazard of the mission and to face the fact that they themselves may be casualties. A survey showed that the men, aviators particularly, preferred to look the facts full in the face. Between missions fliers have plenty of leisure and nothing is more natural than for them to reckon their chances, based on the experience of their group or squadron, to as fine a point as an insurance actuary could do it. Lieutenant General Iven Mackay of the Australian Army says, "We teach our men to expect losses up to 80 per cent or higher, and to be willing to take them in the knowledge that the second waves may have losses of only 50 per cent, and the third wave only 20." Thus trained, soldiers are spared shock and loss of spirit when the toll is heavy.

But no amount of pre-battle training and lecturing can approach the seasoning gained in actual combat. "A great part of courage," Emerson said, "is the courage of having done the thing before." And after the Civil War General Sherman declared, "The war did not begin professionally until after Vicksburg and Gettysburg"—more than two years after the fall of Sumter. It will not be surprising if some equally blunt general makes a similar statement when this war is over.

Hatred can supply fuel for the flame of courage, but too many American soldiers are fighting this war "cold." Director Frank Capra has made for the Army an excellent series of films to show the soldier, "Why We Fight." With documentary scenes he shows the suffering caused by German and Japanese Fascism—bombs dropping on women and children, refugees being machinegunned along highways, opponents of fascism being shot or tortured in concentration camps. The pictures are moving and graphic. Pilots watching them say, "Dropping bombs is going to be more fun next time," or "Let me at the bastards."

Hatred and Anger Move Men Deeply

American soldiers hate the Japanese more than the Germans, probably because they are a different race and because of the underhanded way Japs fight. Such tricks as pretending to surrender and then machinegunning the would-be captors make Americans see red. Torture of prisoners and execution of captured fliers arouse a determination for revenge.

But neither in Europe nor in the Pacific are Americans spurred by any such flaming hate as the Russians show toward the Germans. That kind

of hate is reserved for men who have seen their homeland overrun and their own people mutilated or killed. If the Axis refrained from token bombings of America for fear of arousing this feeling they chose shrewdly.

Hatred and anger often arise spontaneously on the battlefield from shock of a slight wound or a close escape from being wounded, or from seeing a comrade wounded or killed. At the breakthrough at Buna was a Mid-Western boy, a conscientious objector who nevertheless had volunteered out of fear of being considered a coward. He would help with supplies but always refused to shoot at the enemy. One afternoon his closest friend was killed, and his captain, calling him to look at the corpse said, "There, see what the Japs have done to your buddy! They don't mind killing. Do you still say you won't shoot them?" The boy broke out weeping in anger, took his M1 and went to shooting. (Unfortunately he died that same day, with a bullet in his head).

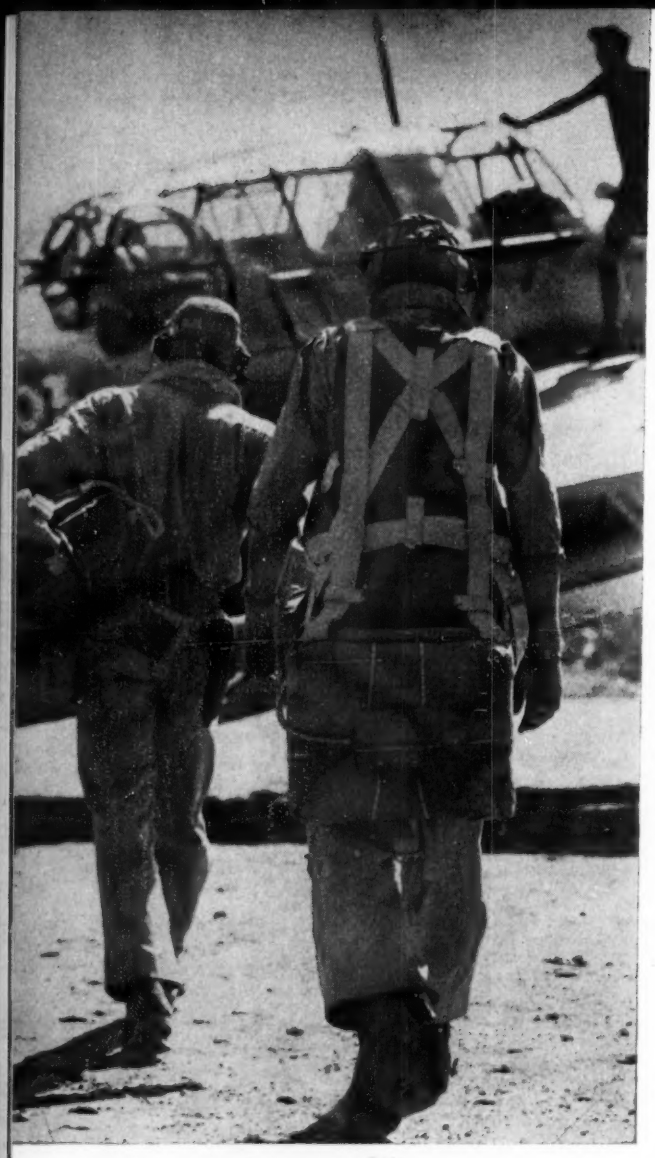
Tough Fighters Are Brave Fighters

In soldiering, as in any other vocation, a man lacks confidence unless he knows his business. Soldiers are killed every day because they fail to remember the fine points of their craft. It may be fatal to throw a hand grenade so quickly after pulling the firing pin that the enemy can pick it up and toss it back, or a soldier may pay with his life for forgetting to replace an empty rifle clip. And the man who can aim a rifle or tommy gun at close range without bringing it to his shoulder may one day have just the split-second advantage he needs to save his life. So with the ability to judge the cover possibilities of terrain, or the type and direction of enemy shells.

Physical toughness helps toward mental toughness. Any commander can cite examples of physically weak men who are lions in battle, and of Atlases who couldn't stand the gaff, but these are exceptions. The physically hardened man can stand the inhuman wear and tear of war without becoming jittery and exhausted. And because he knows he can stand up punching five seconds longer than a Jap or German, he is more self-confident.

The Jap, because of his low peacetime standard of living and his Spartan training, is double-proofed against the deprivations of war. Frontiersmen in the Allied Armies have a similar advantage. At Buna, men from the mines and lumber camps of the Northwest fought better, man for man, than men from the older and more comfortable sections of the country. And in the Australian

"The vision of the dead and wounded you saw on the way up to the front rises to plague you; your belly deflates and lies flat against your backbone . . you are alone."



"Experience shows that aviators especially like to face their chances of survival."

Army men from the ranches and the more recently settled province of Western Australia have run away with several times their share of the decorations.

Men with wind-lined, leathery faces and the far distances of the plains in their eyes feel little of the "hardships of war," for what city men call hardships they have been accustomed to for years. "Red horse and iron biscuit" are better than they were used to in the back ridings; so they are amused to find soldiers whose minds dwell on visions of steak and eggs and ice cream. Of physical hardness, Ralph Ingersoll, in "The Battle Is the Pay-Off," says, ". . . if I were to pray for a miracle I would pray that every barracks in the United States would burn down. Then the American Army in training might start learning to live as it will one day have to live, with the sky for a ceiling and the ground for a floor—in whatever conditions either may be found. An army trained that way would be an army that was at home the day it arrived in the field." Captain Ingersoll might add a supplication that the army also learn in advance to eat as it will have to eat at the front.

Given the best training and indoctrination, soldiers' performance in battle will depend on the kind of leadership they have. Napoleon exaggerated, but not much when he said, "There are no bad divisions, only bad commanders." A corps led by an able and aggressive officer commanding the respect and confidence—if not the affection—of his men will be quite different from one led by a conceited or professionally inferior officer. A soldier's professional reputation and also his life lie in the hands of his commander; he wants to feel that neither will be thrown away.

Leadership and Esprit de Corps

Leading an army in battle is vastly different from exercising command in peacetime. Anybody can give orders and have them obeyed at a peacetime army post. Nothing blocks the way to obedience then, and the guardhouse, pay deductions and demotion may be involved as punishments. But execution of an order in battle means immediate danger, or even the likelihood of being killed; the soldier needs to know why an order is given and how it is to be executed. Above all he needs to feel that the man who is giving it knows what he is about.

When a good non-com guides men into action, he does not stand back telling them to go do a patrol, knock out a machinegun nest, or wriggle through the enemy lines to capture a prisoner for G-2. He starts by doing these things himself, and before long the men are saying, "Look here, you stay back—you're too valuable to risk yourself all the time. We'll do that."

The one sure way to judge officers is to watch them in battle. In peace a college education, a cultured accent and a good drawing room manner may seem important, but they have no necessary connection with ability to command. Before Japan attacked and for nearly a year afterward appointments to officer candidate schools were restricted almost exclusively to college men. But in the test of battle this preference has not panned out. Some college graduates cannot lead men, or even themselves, while many men who had never been inside a lecture hall are natural leaders. So now the questions in choosing officer candidates are, "How much ground did his section gain today?" or "How many machineguns has he knocked out?" Some OCS graduates at the overseas schools may shock one with their grammar and lack of polish, but they give an impression of quiet strength and drive.

The important thing called esprit de corps depends on good leadership primarily, but there are other factors. The term implies not only

respect between the officers and the men but a feeling of confidence and comradeship among the enlisted men themselves. Each man feels the others have good fighting mettle; they will not let one another down in the pinches. And it means the men have pride in their achievements and their reputation as fighters—traditions which must be lived up to.

It is more than coincidence that the Marines have the best esprit of all the armed services and also the best reputation as fighters. A Marine fights for his country, but he fights also to acquit himself as a good Marine. The Marines have an advantage in being a highly selected and until recently, an exclusively volunteer corps. To understand what that means it is necessary only to hear one Marine draw another up short when he is grousing, "What are you bitching about? You got yourself into this, didn't you?"

Back of corps spirit stands individual spirit. Besides not letting his outfit down, the good soldier feels he must not let himself down by acting yellow and laying himself open to contempt. The word "guts" may have become cheap slang among civilians, but it is the best of sound English among fighting men—just as *cojones* is among Spanish soldiers. No one who lacks pride in being known as a man of courage can be a good soldier.

Desire for recognition is a legitimate spur to fighting spirit. Nobody likes the role of the unknown soldier. Many officers think we give medals too freely; that we award them for exploits that, however brave, are not "above and beyond the call of duty." This is a matter of opinion, but there certainly are other means of recognition which have not been fully exploited.

No other war has been as well publicized as this one, and in no war have there been more correspondents who went right to the front. But despite this, for every "hero" story that gets into print, a score remain untold. For the front is wide, correspondents are still proportionally few. Most of them, quite properly, do not too often get beyond regimental headquarters. So luck determines whose saga is sung and whose dies with him. Yet a man who is about to go out to test his luck with death craves a chance to have his story told—to live for a few added days or years in the memory of his friends. He does not give a hang whether the metropolitan dailies and press associations tell his exploit; he would be only a name to those millions anyway. What he really wants is for the people back home—the people to whom he means something and who mean something to him—to know he fought and died well.

This army is literate enough for every platoon, or at least every company, to have its own soldier-correspondent to keep a list of the several hometown newspapers and see that the stories get back. This would be a vital help to morale, on the homefront as well as the battlefront. The Marines have their own correspondent corps, which has performed well and sent many stories to hometown newspapers, but there are not enough correspondents to go around. The little heroes, who are just as gallant as the big ones, deserve coverage too. Recognition is an added incentive to effort.

Compensation and Religion

"Ninety per cent of your heroes," a Naval surgeon said on Guadalcanal, "are constitutional psychopathic inferiors. They compensate for an inferiority complex by proving themselves impervious to danger."

"Reams have been written about the revival of religion among soldiers. Religion has been revived to the extent of being an important solace and support in danger."

This correspondent's one-word reply is "Rot!" The psychological elements in an inferiority and a superiority complex are inseparably mingled, and only an expert observer can say which elements predominate in a given case. Undoubtedly many legendary deeds are done by men driven by personality compensation, but to say that anything more than a small minority of brave men are so moved is belly-wash.

Yet the compensation urge can move racial groups as well as individuals. It seems to have more than a little to do with the fanatical courage of the Japs. It may or may not have been a factor in the superb record of the Fiji Island scouts in New Georgia. The whole Solomons campaign saw no braver or more tireless and effective fighters than the kinky-headed Fiji Colonial troops.

Their performance was the perfect answer to those who argue that American Negroes cannot make good soldiers. Negroes differ, as the individuals of all races differ, but under sympathetic, understanding leadership Negroes can be made the best of soldiers—if the Fijians are an example.

Reams have been written about the revival of religion among soldiers. Religion has been revived to the extent of being an important solace and support in danger, serving (and this is not said lightly) somewhat the same function as the amulets to which soldiers are addicted. Persistent danger drives men to look for support outside themselves, and the toughest sergeant may be found praying in his foxhole during a bombardment.

But religion in this sense is a shield, not a vital, moving force. One sees little or nothing of the spirit of religious crusade which caused Union soldiers to march against Confederate cannon singing, "Mine eyes have seen the glory," or "John Brown's body lies a-mouldering in the grave." Yet the emotional pitch of battle is high, and if there ever were a war for the ethical values of Christianity, this must be that war. Americans fighting with the Spanish Loyalists recaptured some of the Civil War fervor with Julia Howe's "Battle Hymn," but in the present war the great reservoir of idealism latent in American youth has been shallowly tapped.

The Intellect Is Not Enough

The intellect may know why we are at war, but fighting is not so much a thing of the intellect as of the spirit. Men who storm the beaches of Tarawa or Normandy draw only partial comfort from intellectual probity of their cause; they need their hearts to tell them "thy war is a holy war." If they die, they are entitled to die in the warmth of a great cause served and a great sacrifice fulfilled. If a way can be found to pierce through the crust of synicism and bring inner values to life, a counter will have been found for, say, the vital force which Shintoism represents to the Japanese. Such support is needed to carry the fighting men and the nation through the sacrifices which may be necessary to match the losses of enemies fighting with the fervor of men guarding their home soil.

At the practical level the most forthright possible definition of objectives is needed. We cannot say again that we are fighting "to make the world safe for democracy." That slogan was cancelled out between wars. Neither can this be another "war to end wars." It is all right to say we are fighting for "a durable peace," or "a conclusive peace," or "a peace that will give us a long respite from war." But some soldiers look upon such phrases as toned-down versions of the other disproved slogan.

Soldiers are likely to say, "We are fighting because we have to," meaning by "we" the nation. This is the soldier's way of saying we are fighting for the national honor, because America was attacked, and for national security, because if America did not take the war to the enemy he would eventually bring it here.

Required: A Simple, Realistic Credo

These points cannot be made too clear. Failure to make them explicit would be to repeat what Walter Lippman termed the most serious error of the First World War. He said, "The United States did not go to war (in 1917) to make the world safe for all democracies, to overthrow the Kaiser and make Germany a democratic Republic, or to found a League of Nations; it went to war in order to preserve American security . . . Because this simple principle was not made explicit, the nation never understood clearly why it had entered the war. As time went on the country was therefore open to every insinuation that the country had fought for no good reason at all, that its victory was meaningless, that it had been maneuvered into a non-American war by the International bankers and the British diplomats."

To insure against a similar disillusionment after this war, the education and indoctrination of fighting men should be as simple, straight-forward and realistic as possible. Our credo might run like this:

1. We fight because of our national honor. Japan, with Germany's collusion, slapped us across the face.

2. We fight in self-protection. If we had permitted Japan and Germany to win this war, they soon would have brought the war to us on unfavorable terms.

3. We fight for humanity. Common decency would not permit us to sit with hands folded while Germany enslaved Europe, and Japan raped and robbed a defenseless Asia.

4. We fight in the hope of establishing a world order which can secure peace and a division of the world's resources to give a better life to all nations.

5. We fight in the faith that God will bring victory to the brave and the just. **END**

Crash Crew in Action

The job confronting the search and salvage platoon is not the glamorous one pictured in the movies, but a tedious and often dangerous assignment in the none-too-pleasant Carolina boondocks. *By Capt. J. S. Burrows*

MOST people think of a crash crew as a glamorous outfit, its members springing forward at the sound of the crash warning and rushing onto the airfield with life-saving and fire-fighting equipment even as the luckless plane falls earthward in its final plunge.

These same people can visualize the scene of Martian creatures in huge asbestos suits dashing into the flaming wreck and dragging the fliers to safety, medical aides administering first aid and whisking survivors off in crash ambulances, and the crash crew stolidly pulling the wreckage off to the boneyard and standing by for another crash to occur in the "you can crash here" area.

That's the way it always happens in the movies. If you have that kind of a setup at your field, you're lucky and should read no further. But if your field is like ours here at Cherry Point where your territory includes hundreds of square miles of boondocks, you know that most crashes just don't happen on your doorstep where you can sweep up the pieces and go about your business, serene in the knowledge that all crashes are well regulated affairs which take place on schedule at an appointed place.

Why should they—when there's the whole eastern coast of North Carolina, South Carolina and Virginia to pile up in? Most of our crashes occur far out in the boondocks, miles away from Cherry Point or any of its eight outlying fields.

Although we maintain crash crews "on the line" at all eight fields, we still use a master crash crew, one we call the search and salvage platoon, to handle crashes in the boondocks. The crews at the

It is the search and salvage platoon's job to find and salvage any Marine plane that crashes in the almost limitless stretch of swamps, sand dunes, and forests.

outlying fields must stand by in case a plane crashes on their field. If a crew were removed from "the line", it would be necessary to secure all flying at that field. With the large amount of operations we carry on here, that would mean a disruption of our training program. Then too, these crews "on the line" don't have the heavy machinery needed to handle boondock crashes.

It is the search and salvage platoon's job to find and salvage any Marine plane that crashes in the almost limitless stretch of swamps, sand dunes and forests known as the Carolina low country. This section contains some of the meanest terrain in the world. That's why the Marine Corps located Camp Lejeune and Cherry Point here. Probably more than any other eastern tract, the low country duplicates battle conditions Marines are expected to encounter. It's really rugged!

Crash Sites Not Accessible

The country around Cherry Point seems to be made up chiefly of several hundred years' accumulation of long needles from southern pines, animal leavings, and a certain amount of brackish water, all of which has settled into a pulp which is referred to as swamp "land." A good deal of it can be walked upon if you keep moving. If you stop, however, you find yourself sinking through to the water table which is about 18 inches below the surface.

Adding to the general discomfort of anyone who elects to go overland is a tangled jungle undergrowth of scrub bushes, brush, and a particularly disagreeable vine with three-quarter inch thorns. You usually come out of the woods looking as though you had slid down a revolving tube lined with nutmeg graters. Rattlesnakes also do their part in making the terrain disagreeable.

Two years ago, when Cherry Point was young, we could see that a station such as Cherry Point was to become must expect many crashes. And these crashes were not to happen on the runways where rescuers could get to them quickly . . . and where airplane parts could be salvaged easily. They were to occur far out in the Carolina lowlands.

That was in the spring of 1942 and the air station was only six months old. Construction was still underway. Our "air fleet" was made up of a couple of dubious Ducks and a Douglas. We had practically no flights of our own but there was some non-Marine flying going on. A Navy squadron doing submarine patrol duty came in and made its headquarters here for a while, as did two or three Army outfits.

It was the Army flyers who first brought to the motor transport division the harsh realization that sooner or later we would be called upon to do some plain and fancy boondocking. One of the Army pilots piled up right on the base. It wasn't our job but we could see there were no adequate means to gather up the wreckage. "What if this crash had happened out in the boondocks?", we asked ourselves. We knew that handling it with the present equipment was hopeless.

The "swamp cat" is towed to the scene of the crash by a two and a half ton truck.

Lesson number two came shortly thereafter. Another plane crashed—this time in the Neuse river nearby. We noticed the extreme difficulty Army workers had in raising the plane from the river bottom and in removing the bodies. The methods seem crude and improvised. We knew something had to be done about it.

We were interested not only from the human standpoint but because our equipment would be needed when a crash occurred out in the wastes. These calls, and a few attempts at attacking the swamp "land" without special training and equipment convinced us a specialized organization was needed.

Radio Sets Installed

So the search and salvage platoon was organized. Transportation men were recruited because most of the heavy equipment belonged to them. The search and salvage business was virgin territory. No manuals or plans for forming such a crew could be found. All of the writers on the subject seemed to think that all crashes occurred "on the line," and completely ignored the boondocks.

Training was by trial and error because we had little time to make dummy runs. Most of our "dope" came from critiques issued following each boondock crash. Every man took part in these sessions, voicing his opinion on better procedure while he applied iodine swabs to the newest scratches.

At first we tried locating planes by sending half a dozen men into the woods from the road closest the crash. We found this hopeless and called upon

A sending and receiving set in the carryall truck helps speedy location of the wreck.

ready pilots to reconnoiter the area, find the crash, and direct searchers to the scene. Sometimes the pilot would drop notes in weighted packets with streamers attached. Although the pilot's aim was usually excellent, wind drift often caused the message to land 100 or 200 feet to one side of the general route. Sometimes we hacked four times as much to get a message as we would have needed to proceed directly to the crash.

We decided to try radio, and shortly after went on a crash with the ready pilot and the searchers equipped with handy-talkies. The pilot finally gave up trying to triumph over motor static and the general unhandiness of manipulating an antenna in the close quarters of a Piper Cub. As a last resort, he swooped down to treetop height and called out the directions.

After much experimenting, we rigged up sending and receiving radio sets in the Dodge carryall, the vehicle that leads the crash convoy. We have found this arrangement satisfactory except that the rugged treatment the radios receive makes it necessary to have them adjusted frequently.

After several months' work, we still found it practically impossible to get our heavy rescue and salvage vehicles into the woods and swampland. Trucks and even tractors bogged down in the mire. Although we could cut pathways through the woods, it was impossible to hack roads for the trucks. Experiments with oversize tires and dual wheels were not too successful.

About this time the base received some Minneapolis-Moline 4x4 airport tractors and we thought they might be the answer to our boondocking problem. Permission was granted by the Bureau of Aeronautics to convert one of the tractors into an experimental "swamp buggy."

We replaced the regular wheels with those from a disabled turnapull and were lucky enough to find four old 16x24 tires and tubes to fit the wheels. We burned out the Moline wheel hub spider, reversed it, and welded it to the inner edge of the turnapull wheel. This gave an offset which allowed the buggy to turn. Next we stripped the fenders, front lights, and parts of the running board off the Minneapolis-Moline, replaced the radiator grill with the window bars from an abandoned hunting lodge, and made a bumper from pieces of scrap channel iron.

This "swamp buggy" had decided advantages over our other machinery. Its roadability on hard-surfaced highways was affected very little and it was useful except in extremely swampy places where its 6900 pounds made it unhandy. It is still used as an important part of our stand-by equipment. More important, however, it pointed the way for the specialized equipment needed for boondocking.

About this time, I read a report by a Navy captain in Miami on the very subject that had been giving us so much trouble. From his report, we got the idea for special outrigger wooden cleats for a TD-9 caterpillar tractor. While these cleats proved much better than anything we had used in swampland, muck filled in ahead of the wooden cleats and stalled the tractor, leaving the cleats helplessly spinning in the bog.

Year Of Research

We replaced the wooden cleats with special ones we invented. Cutting angle iron into 24-inch lengths, we substituted them for the original steel shoes on the cat. Here we had the basic unit around which our present search and salvage tractor is built. For want of a better name, we christened it the "swamp cat."

The "swamp cat" has proved entirely satisfactory for practically every type of terrain we encounter. Although it will sink in soupy bogs, if kept moving it will proceed over swampy areas which will not support a man for even a moment. The winch on the front of the cat is used to pull it through in case the bottom absolutely falls out. Equipped with 300 feet of cable, we have always managed to get a bight on something substantial up ahead to get the "swamp cat" started again.

It was not until a year of search and salvage work that we finally decided what our nucleus of equipment should be. Still subject to modification, our complement includes a radio carryall; a Dodge 4x4 three-quarter ton truck; the "swamp cat" mounted on a 10-ton trailer and towed by a 6x6 two and a half ton truck; the crash ambulance; and a jeep. A 4x4 fire truck goes along when fire is reported and a crane car is sometimes used for salvage work.

The radio carryall is an excellent woods machine in its own right. Equipped with an illuminated Hull motor compass and radio, it is actually pos-

sible to proceed by instrument on a magnetic heading given by the ready pilot. This is important when the underbrush is so thick it obscures the crash convoy from the plane.

On more than one occasion, we have proceeded through small stands of timber up to three or four inches in diameter so completely overgrown with brush and vine that no visibility was possible beyond the front of the carryall. With only a compass to guide us, we have traveled nearly a mile through brush to a point where the ready pilot could pick us up again.

Equipment Ideas Grow

To aid the search, we have installed a gun turret blister, salvaged from a plane, in the carryall's ceiling. Standing up inside the blister, the radioman can receive instructions from the pilot, and watch the plane at the same time. Sometimes the pilot flies over the crash and wobbles his wings to let the radioman know the correct course. Before the blister was installed, several crew members suffered falls from the side of the carryall where they hung to watch the plane.

The "swamp cat" I have already described. In addition to the special cleats, however, we have made other changes from time to time. First, we built a rear platform for crew members to ride. Several men had been thrown off the cat in rugged trips and had received severe cuts and bruises.

Next, we installed litter platforms on the sides of the cat's hood to help remove bodies from places where the crash ambulance could not penetrate. We built the platforms after a harrowing experience in which we had to strap bodies, wrapped in rubber bags, on the warm sides and top of the hood. Now corpsmen can place wire baskets on the platforms to remove injured persons or bodies. The platforms are also used to carry corpsmen and crew members who formerly risked being thrown beneath the cat's tracks.

Latest addition to the cat's superstructure is a high guard-rail to protect the driver from branches and vines. This change was made recently after a cat operator suffered severe slashes across the face while driving in the dark through a densely wooded area. The guard-rail is semi-circular and acts as a tender, staving off branches.

The 6x6 truck pulls the 10-ton trailer and "swamp cat" and is equipped with a large gear-box which contains all of the search and salvage platoon's tools. Included in the gear-box is a machete, two brush axes, two liferafts, K-rations, a set of airplane tools, road flares, boots, picks, shovels, wire shears, blocks, field telephone equipment with 2500 feet of telephone wire, climbing spurs, carbon dioxide, 300 feet of rope, floodlights, water kegs, drinking cups, clamps, Very pistols, pistol and parachute flares, red flags, flashlights, jacks, crowbars, tape measures, gasoline, rifles, first aid kits, blankets, chains, and maps.

Although the crane car is used for lifting the heavier pieces of wreckage, the platoon usually can handle all hoisting by winches on the "swamp cat" or the 6x6 truck. The jeep runs back and forth with messages, acts as scout car for the crash convoy, brings up emergency needs, and seeks the best routes into the boondocks.

The search and salvage platoon has men standing by 24 hours a day. When a crash call comes in, the well-oiled machinery of the platoon's system gets underway. On first advice of a possible crash from the control tower, a ready plane is warmed up and taxied out onto the runway where a ready pilot awaits final radio instructions from the officer in charge of the control tower.

The same crash call goes out to several other points. At crash headquarters, the search and salvage officer immediately puts a stand-by radioman on the carryall radio to contact the control tower. The officer then locates the probable scene of the crash on his master crash locator map.

Meanwhile, sick bay, the fire station and the assembly and repair building have received the warning. Sick bay dispatches a crash ambulance with a medical officer and two corpsmen to crash headquarters. Assembly and Repair and the fire station are alerted. A & R will send a crew of airplane mechanics if the squadron in charge of the crashed plane has no squadron mechanics available. The fire truck will join the crash convoy if the control tower reports fire accompanying the crash. Coffee and sandwiches are picked up. A photographer joins the convoy.

Master Map Plots Course

While the convoy forms, the carryall has maintained contact with the control tower and ready plane. The control tower officer establishes a rendevous point for the plane and convoy and flashes "take it away." The crash convoy moves out at top speed, the carryall taking the lead. Close behind comes the 6x6 truck with the "swamp cat", the crash ambulance and the jeep. In command of the convoy is the search and salvage officer who

The "swamp cat" has proven itself entirely satisfactory on practically any footing.

rides in the radio carryall. He bases his decisions on information flashed from the control tower and ready plane. From time to time, he consults his master crash locator map which shows the entire Cherry Point area, previous crash sites, and the best roads available. This map is kept up to date to save the crew from cutting many new and unnecessary roads. The ready pilot and control tower officer have copies of the master map so that any directions given will be uniform.

One Officer In Charge

The ready pilot, speeding far ahead of the convoy, locates the crash, reconnoiters the area, and radios the carryall the best route to the crash. The pilot then takes over the task of guiding the convoy from the air, at the same time keeping a lookout for survivors who may have parachuted to safety.

When travel by carryall is no longer possible, and this is generally the case for the last mile or so, the "swamp cat" is unloaded from the trailer. A crew member straps a walkie-talkie on his back and climbs on the rear platform of the cat. Another walkie-talkie at the carryall will relay information to and from the control tower and plane. This relaying is troublesome and time-consuming and could be eliminated by placing all radio units on the same frequency.

If the trip is through rugged terrain, the doctor, corpsmen, and crew members climb aboard the cat, riding on the litter platforms.

By this time, the control tower usually has gathered further information on the crash and can tell us what kind of plane is involved, how many persons were aboard, whether the plane carried bombs, and other pertinent data.

The crew's first job is to locate the pilot and passengers. When there are injured persons or fatalities, the bodies are placed on the litter platforms and carried back through the woods or swamp to the road where they are transferred to the crash ambulance. Sometimes the ambulance can drive directly to the crash, following the road broken by the "swamp cat."

If fire is encountered, the crash crew fights it with extinguishers while the cat breaks a trail for the fire engine. One or two trips back and forth by the cat will build a fairly good road.

After the rescue of personnel, salvage work gets underway. Vital parts are removed from the plane, preserved, and loaded on trucks for return to salvage where they are inspected and checked for use as spare parts. Mechanics from the squadron owning the plane or from A & R aid in the salvage.

The importance of giving the search and salvage officer complete control of the operation cannot be overstressed. Naturally, there are many persons vitally interested in affecting a quick rescue in every crash. Quite often senior officers with some excellent ideas appear on the scene. By mutual agreement, however, they make no attempt to direct the search and salvage platoon.

While the search and salvage officer welcomes suggestions, on several occasions we have encountered considerable difficulty in being instructed to do things which the limited number of men or the equipment were not capable of doing. Any attempt to carry out more than one officer's ideas at a time results in confusion, waste of time, and damage to equipment.

We have also learned that night searching is not feasible unless directed from the air. On one occasion, forty or fifty people searched from sunset until dawn and ended up in the rain. The next morning, the ready pilot came over and located the crash in about 15 minutes, thereby nullifying the work of an entire crew the preceding night.

While rescue work is a very serious business, occasionally we find something on the lighter side. One night several months ago, a crash was reported two or three miles from the main base. We moved out into the boondocks under the guidance of a ready pilot. He reconnoitered the area and reported the crash had been sighted and was afire. He then guided us toward a nearby blaze in the forest. Travel by vehicle soon became impossible and the searching party proceeded on foot. After a grim three or four hours of hacking at serpentine, thorny vines, the worn out detail arrived at a clearing.

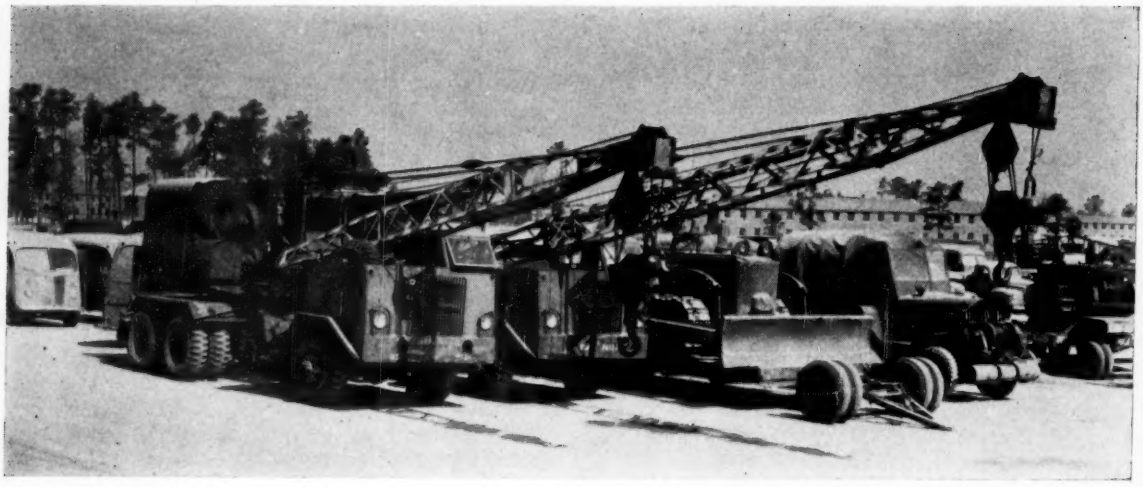
There, blazing quite merrily, was a small fire. Above it was a very well made rural refinery, commonly known as a still. It was complete with coils, condensation tank, mash, jugs and all. Alongside was a lighted lantern—indicating the owner was still about. No personnel was aboard at the time. Without a word, we did a prompt "reaphawh" and started back toward the road. Every moment we expected a moonshiner to give us a charge in the back with whatever it is a moonshiner rams into the muzzle of his squirrel rifle.

Our search and salvage platoon handles land crashes only. However, our equipment is loaned to a boat crew for crashes in the Neuse river or along the coast. The boat crew's work is a story in itself.

"Cat" Very Efficient

The entire search and salvage platoon has been schooled in first aid and often renders assistance to the doctor and corpsmen. Its members can also take care of their own injuries. Crew workers know radio procedure and the phonetic word code. Although efficient operation of a radio is easy for pilots or radiomen, it takes considerable schooling for mechanics, bulldozer operators, and crane operators.

Care of the rolling stock is vitally important. The search and salvage officer makes daily, weekly, semi-monthly, and monthly reports on the condition of the vehicles. Each truck is checked for gas,



A pool of crash crew equipment "on the line" at the Marine Base, Cherry Point, N. C.

oil, air, water, or anti-freeze every morning. Radios are tested every day at 0800 and 1600.

Crash crew members show amazing versatility. At times, they act as corpsmen; at others as airplane mechanics and also as transport men or radio operators. They have meant the difference between life and death for many crash victims.

The crash and salvage platoon has grown from a unit of six members and a handful of volunteers to a platoon of 24 regular workers and several allied units.

Our equipment has become more or less standardized but a year or a couple of months from now or even tomorrow, we may find some slight modification that will aid our work. Recently we decided to paint all vehicles a brilliant orange to aid the ready pilot in spotting them from the air. However, the carryall, 6x6 truck, "swamp cat," and jeep, will probably remain our basic outfit. While not yet 100 per cent effective, they have proven to be the most efficient combination we have been able to devise thus far.

Jap Industrial Targets Concentrated

Japan's heavy industries, now targets of the 20th Air Force, are concentrated in less than ten main cities in Japan proper. The country's largest steel smelters are at Yawata, target of the first two B-29 raids, on the island of Kyushu. The naval base of Sasebo, hit on the second raid, also is on this island.

Tokyo, stretching out to its port, Yokohama, is the farthest eastward of the important cities. A new metropolis, Nagoya, containing great textile mills, lies 160 miles westward. Further west is Kyoto, and thirty miles from there is the city of Osaka, with a population of 3,350,000 and many industrial factories. Kobe, the port of Kyoto and Osaka, has 1,100 factories itself.

Japanese-held territories contain important industries, too, such as the aluminum plants in Formosa, hydro-electric plants in Korea, and the Mukden Arms Manufacturing Company in Manchuria.

One thing that must be remembered is that Tokyo isn't going to burn down and blow away the first time it is attacked on a big scale. The idea that this city is merely a collection of paper houses is wrong. Tokyo is bigger than Berlin and smaller only than London and New York. It has a population of about 7,000,000 and covers 217 square miles. The center of the city, rebuilt (with a lot of American help and money) after the earthquake in 1923, is like a modern occidental city. It has big steel and concrete buildings and broad streets which were built as fire-breaks in the outlying, flimsily-constructed districts.

The experiences of the 1923 earthquake will help the Japanese when our bombs start taking the town of Tokyo apart. Because they have long expected another earthquake, they built their business and industrial sections especially to withstand shock, concussion and flames. Special architectural techniques, some of them first displayed by Frank Lloyd Wright when he built the Imperial Hotel—the only building to stand up during the quake—have enabled the Japanese to construct buildings which can withstand terrific shocks.

The industrial belt of Tokyo strings out some 18 miles from the center of the city with factories, shipyards, naval bases, piers, warehouses and arsenals reaching down the Bay of Tokyo to Yokohama. Yokohama has some 4,500 factories and huge wharves capable of handling large ships.—From *Air Force,* August, 1944. Condensed.

British Marines Off Normandy

An American Marine Corps correspondent accompanied Allied Invasion forces on "D" Day; he tells here the important part played by the Royal Marines. *By Tech. Sgt. Richard T. Wright*

ON D Day of the greatest invasion in world history, I was assigned to accompany a group of British Royal Marines and to observe them in the heat of battle against the Germans along the Normandy coast. Our ship was a Landing Craft Guns whose purpose was to move in ahead of assault troops and blast shore batteries before they could do any damage.

The ship mounted some sizable guns along with numerous 20-mm Oerlikon antiaircraft weapons. Royal Marines manned the guns and along with ten sailors helped run the ship. The ship was commanded by a lieutenant of the Royal Navy and a Marine lieutenant served as gunnery officer.

About forty per cent of the ship's company had seen action before and they seemed to take the impending event lightly. One corporal worked out a bookie form in which he offered varying odds that our ship would get sunk by everything from glider bombs to German shore batteries. Most of the Marines were Scotsmen, but there were also a few Londoners, Welshmen, and Irishmen. Our coxswain, a lusty character nicknamed "Wheelhouse Jake," laughed uproariously when I had to abandon efforts to sleep in a hammock and slept on a stretcher instead. An ex-pug named Harry was our cook, and like U. S. Marine cooks he gave the impression that he hated everybody, but the chow was good and plentiful.

After several days aboard the ship we finally received the order to move. At seven-thirty on the morning of June 5, our ship moved slowly out into the stream, where we fell into line along with hundreds of other similar craft. We could see hundreds of troop transports and warships nosing out into the channel where they fell into column behind the minesweepers. Our job was to land units of General Montgomery's Canadian troops at Courseilles, France.

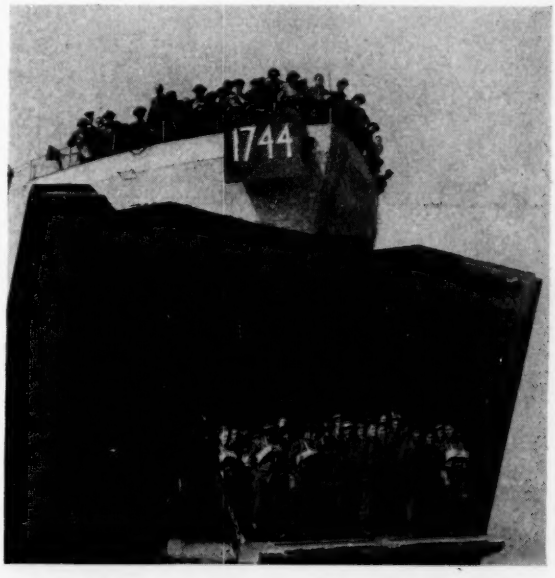
Bound for the Continent

At ten-thirty the crew was ordered to the mess deck, where the Royal Marine officer briefed the men. Our target was a Nazi pillbox which housed what was believed to be a battery of 75-mm howitzers. "Wheelhouse Jake" asked the skipper's permission to "splice the main brace," which meant an extra issue of rum before going into action. His request was granted, along with an order to Harry to feed the men a hearty dinner.

At nine o'clock the night of June 5, all hands were ordered to action stations to look for mines, our first real menace. At eleven o'clock the sky was overcast with dark clouds, and it was chilly and damp. Off our port beam we could see flares bursting in the distance. At eleven-thirty the skipper stated that we were slightly off our course. For twenty minutes we floundered around in an unswept channel.

"Mine off the starboard bow," screamed "Wheelhouse Jake" suddenly. As we swung hard to port an ominous looking dark spot moved on behind us. At twelve o'clock we could see great flashes of orange flame lighting up the sky ahead. The Royal Air Force was out in full force, with German ack-ack fire bursting all around them. We were only fifteen miles off the coast of France. It wouldn't be long now.

Coming up on deck after a sleepless night we could see the thin grey French coast line off in the distance and I wondered if Jerry knew we were here. The sky was still overcast and rain squalls at times obscured the coast. But through the glasses I could occasionally see a smooth white beach, a church spire, numerous two story houses, and the concrete pillbox which was our target. At six-thirty the thunder of a heavy cruiser's guns directly astern of us heralded the invasion of France in our sector. Battleships, cruisers, and destroyers blasted away at the beach, and we could see great spurts of dust and debris shower high in the air where the shells had found their mark.



British troops, aboard a Landing Craft Guns, wait to disembark on French coast.

At this point we began an anxious thirty-minute wait for squadrons of Flying Fortresses which were to bomb the beach before the actual landing assault began. Then, at seven o'clock, mighty explosions rocked the beach, and for a few minutes the coastline was hidden from sight as the men of the American Ninth Air Force plastered the beach.

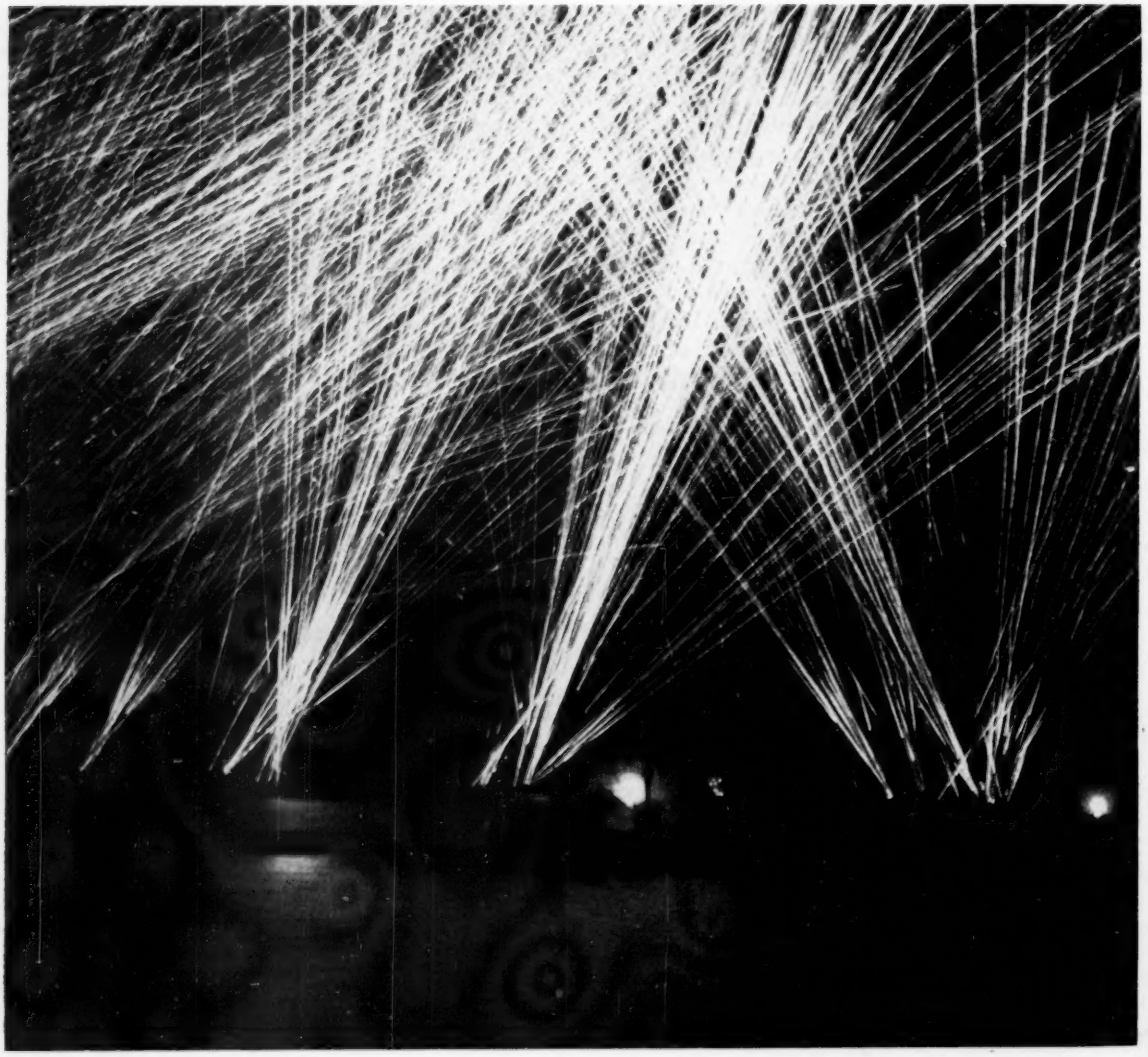
"Wheelhouse Jake" had gone below to issue his tots of rum, but at the sound of the cruisers' guns, he made for the wheelhouse, where he remained for the next two hours. From the bridge I heard the skipper give the command: "Full ahead together." Our craft steamed out in front of the other craft toward our target, as warships continued to fire and rocket ships pounded the beach.

Presently our Marine officer gave the order to commence firing, and two salvos rocked our ship back in the water. A corporal and I headed for a a twin 20-mm Oerlikon gun on the port side of the bridge. We waited until we were within range of the shore batteries; then the corporal began blasting away at beach defenses.

"I hope to hell I'm hitting something," he yelled as he loaded. Our ship fired salvo after salvo, aimed at the section between the first and second stories of the houses while 75-mm shells flicked the water not more than ten yards off our port beam.

From our position I saw two Royals come down from the rear gun platform with their hands dripping blood. One kept holding his side. The corporal ripped the man's pants off and picked a piece of shrapnel out of his hip. His little finger was also blown off and he looked very sick. The other man was covered with blood where a large piece of shrapnel had taken off part of his hand. His only concern was a ring which his girl had given him a week before shipping out. "I'll kill all those dirty bastards," he kept screaming as we tried to keep him from going back to the gun.

When we had bandaged the men we went up



Allied guns weave a tapestry of flame in the night skies off the Cherbourg peninsula, as Nazi planes appear overhead in attempt to bomb invasion ships.

to the rear gun platform. The gun captain had blood all over his face and his men were glassy-eyed. But one, a Scotsman, winked at us and said, "All right, laddies, don't hit any of them French brothels."

Finally, the order came to cease firing. The Royals dropped to the deck exhausted. The pepper of machinegun fire ashore showed that our troops were now fighting in the streets of the small town. Harry produced some tea, and the spot of rum the men had missed at the outset of the action.

Dead ahead an LCT buckled in the middle with a blinding flash. Canadian tanks splashed ashore and began firing at Nazi machinegun nests and pill-boxes on the top of a large rise to the right of the village, while infantrymen stormed up the roads leading inland.

Taking count of our damage after the action we found the ship had been hit more than once. One shell had entered the mess deck, literally chased a Royal Marine around the room and finally dropped to the deck spent. He grabbed it and raced for a forward hatch where he stumbled hastily up the ladder and tossed it into the sea. "It took ten years off my bloody life," he stated later.

The job was almost done. Moving out to the mouth of the Seine river that night, we took up an anchorage with other ships in a half circle around our sector to protect small craft from German "E" and "W" boats. Red tracers filled the sky as German ack-ack banged away at Allied planes towing gliders and every ten minutes a plane would plummet seaward in a ball of orange fire. Ammunition dumps flared up every so often on the shore as a battleship's heavy guns took their measure. A Junker 88 flew in low over the water, and was shot down by a Landing Craft Flak.

Exhausted, a Royal Marine from Edinburgh catches a short nap during lull on "D" Day.

On the afternoon of the second day I went aboard an LST bound for the United Kingdom. As I bade the Britishers goodbye, I wondered if the U. S. Marines and the Royal Marines might some day be linked in combined operations in the Pacific. It would be interesting to watch.

Jap Odds at Saipan

Lieutenant Colonel Evans F. Carlson, recuperating from wounds received at Saipan, describes that campaign as "a combination of Tarawa, Tulagi and Guadalcanal."

"The main difference between this and any of the other battles is the amount of artillery fire our forces encountered," the wounded officer explains. "That difference was to be expected because the character of the terrain lent itself to mortar and artillery fire.

"From the time we went in they hit us with mortars and continued to offer strong resistance. The volcanic terrain and the caves the enemy had constructed among the rocks added obstacles to our conquest.

"The Japs had all the advantages at Saipan. They fought mostly at night because they were familiar with the terrain. During the day they couldn't put up much of a fight because of U. S. air power which afforded a perfect 'umbrella' of gunfire. The Japs fought the same as always. They were strong and tenacious. Saipan was vital to us and vital to Japan strategically. It stood to reason they were going to defend it strongly."
—By PFC Mel Fiske, Marine Corps Combat Correspondent.

Nightmares by the Numbers

A steady, haunting parade of Marine raiders against the foe at Rabaul and Kavieng was started as an experiment. A haggard, sleepless, Jap foe proved its success. *By T. Sgt. Harry S. Bolser**

THE first Marine squadron of Mitchell (PBJ) bombers, the Flying Nightmares, has been turning in a creditable record of hard work well done. The squadron, skippered by Lieutenant Colonel Andrew B. Galatian, Jr., went into action from bases in the Central Solomons in mid-March. After a few daylight familiarization strikes against New Britain and New Ireland, it was assigned the tedious, hazardous mission of night heckling.

Under a plan devised by Commander, Aircraft, Solomons, the squadron devoted a major portion of its combat missions to destroying enemy morale by depriving him of sleep in the areas at Rabaul and Kavieng. During the day, these areas were under constant attack by single, twin, and multi-engined bombers based in the Solomons. Then the Flying Nightmares took up where the day strikes left off. At dusk, as the enemy crawled out of his rubble heaps, one of the Marine PBJs would thunder down the coral runway at a mid-Solomons strip and head up the water highway to New Britain under cover of night. Just about the time the weary Japs had finished their evening meal, the PBJ would appear over Rabaul or Kavieng at an assigned altitude. As it bored over the target area, it dropped several bombs and retired. Then a few minutes later, the plane came in again, lower this time. Another run and a few more bombs. Then it retired but never out of sound range of the enemy on the ground. Just about the time the Japanese relaxed, the Mitchell made another run—at a still lower altitude.

Fine Work Commended

On its last run, the night marauder came in low enough to strafe the area while dumping its last few eggs—and then headed for home. Just as the sound of its motors died away, the Japanese heard the twin-engines of the second in a parade of Marine planes which never let them out of the foxholes until dawn. The second plane carried on with its share of the maddening performance.

Regardless of weather, the Flying Nightmares carried out this haunting, by the numbers, over Rabaul and Kavieng, night after night. Nocturnal heckling is exhausting and tricky, but the pilots and crews of the Mitchells kept their raids going constantly, blasting the bases of the enemy.

The squadron's diligent work in this field was recognized in a letter of commendation to the unit from the Commanding General, 13th Army Bomber Command, under which the Marine squadron operated:

"You have . . . developed the dangerous, tiresome mission of night heckling to the highest perfection it has attained in the fourteen months I have been working under Commander, Aircraft, Solomons." In addition, the commendation said: "In air radio discipline and day formation bombing technique, this Marine squadron, in the space of a few weeks, matched similar units which have been operating under ComAirSols for nine months."

Experiment Proves Successful

To that commendation Army Major General H. R. Harmon, then Commander, Aircraft, Solomons, added the following: "It gives me great pleasure to add my own commendation. This Marine squadron came into this theater well organized and trained. In all of its combat missions it has demonstrated a determined and aggressive spirit and a high degree of operational efficiency."

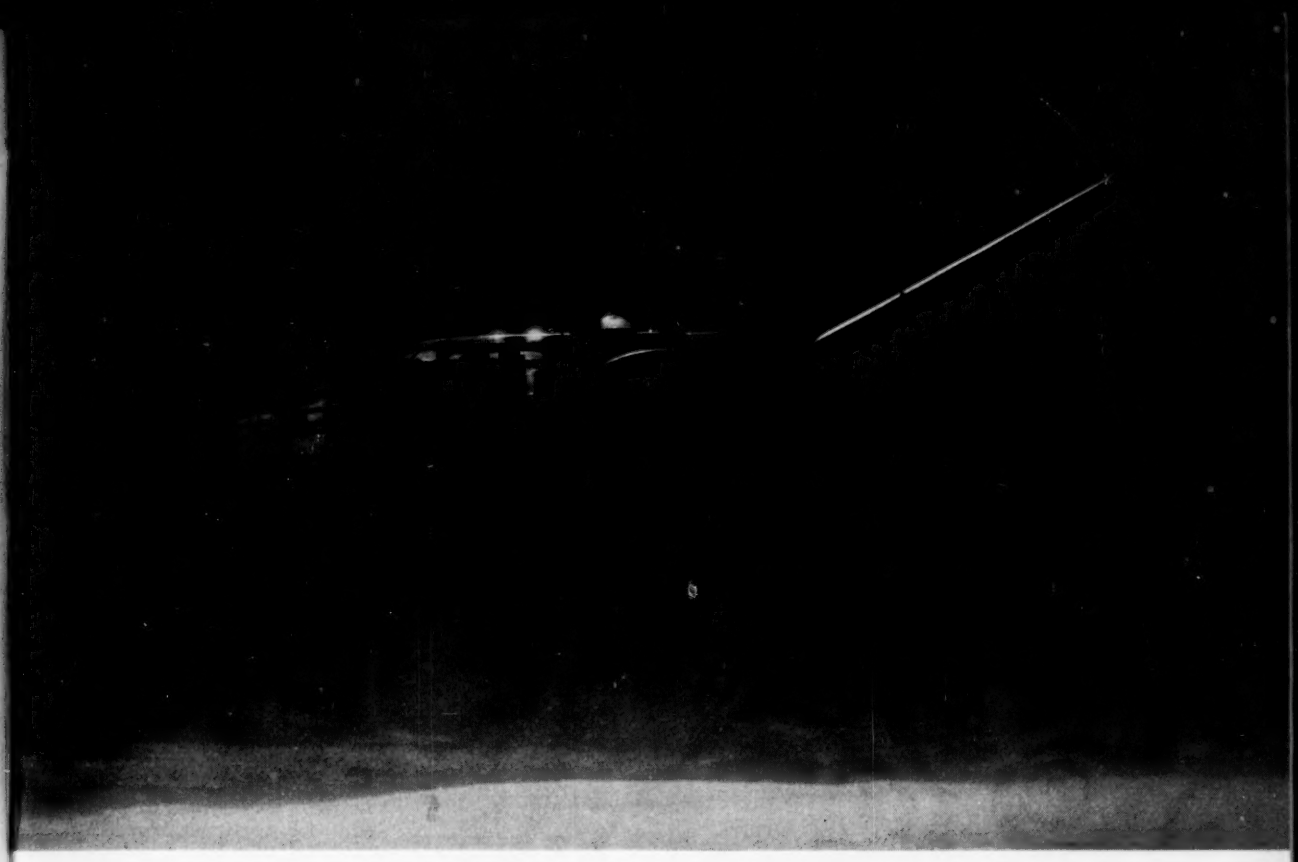
The Mitchell bomber, known in Army aviation as the B-25, has the following characteristics, according to official releases: two Wright 1700 horsepower radial engines; 67 ft. 6 in. wing span; maximum speed in excess of 300 miles per hour; weight 35,000 pounds; 25,000 ft. operational ceiling; tactical radius of 400 miles; and the attack type has fourteen .50 caliber machineguns and a 75-mm cannon.

The Mitchell can be used for low-level attack and strafing as well as medium altitude bombing. Its effectiveness against shipping was aptly demonstrated by its skip-bombing operations in the Battle of the Bismark Sea. Beyond its nocturnal heckling operations, the first Marine PBJ squadron also distinguished itself during its patrolling activities and in its daylight raids.

Training began for the Nightmares at the Marine Corps Air Station at Cherry Point and Edenton, North Carolina, under the guidance of Colonel Galatian. After sweating out months of drilling in air discipline, tactics, gunnery, bombing and navigational flying, they finished their rugged training program and were shipped to the South Pacific combat area. They went into action in March, 1944, under the command of Colonel Galatian, veteran of fifty-five combat missions in the Solomons as the pilot of a Marine photo plane.

The first daylight haymaker of the Nightmares was aimed at Takubar Mission, a supply dump and labor camp, ten miles from the base at Ra-

* *Marine Corps Public Relations.*



This North American Mitchell (PBJ) slides through the night sky on a mission from a Marine base. This type of plane was used to "haunt" the Japs at Rabaul and Kavieng.

baul. During the briefing which preceded this bombing mission, the Colonel impressed on his pilots and aircrewmen that theirs was an "experimental" squadron and that the formation of additional Marine PBJ units and the continuation of the Marine Mitchell twin-engine bomber program depended in large part on the success of this first squadron. Shouldering that responsibility, the untried Nightmare pilots headed for Takubar Mission. The tight formation they flew widened near the target as enemy flak started bursting around the bombers. The bombardiers took over as the pilots held the planes steady on the course. They dumped their load on an area only 500 by 150 yards.

All planes returned safely but several were peppered with flak. There was one slight casualty. A radio gunner suffered a scalp laceration when concussion from a bursting shell rolled the plane, banging him against a bulkhead. "A job well done," was the message the squadron received the next day from ComAirSols. The squadron was credited with laying eighty-two of eighty-four of its bombs in the small target area.

On another day mission for the unit, Lieutenant Robert F. Smart, bombardier, exemplified the coolness and courage which hallmarked the entire squadron in action. Hit in the right arm near the shoulder by flak while sighting in on the target area, Lieutenant Smart never lifted his eye from the bomb sight. He calmly tripped the bomb release with his left hand and plastered the target.

These casualties were by no means all that the squadron had to suffer. The night marauding in all kinds of weather was costly in men and planes. On more than one occasion, bombers of the Nightmare squadron took off in tropical storms or were caught in thunderheads far out at sea and never returned. As storm fronts moved in at night, pilots and crew would look dubiously at the threatening sky, cross their fingers, and take off to keep up the murderous monotony of their night raids.

The success of the Flying Nightmares in combat guaranteed continued and extensive operations by Marine Mitchell bombers squadrons against enemy positions as part of the Marine ground-air team all along the bitter road to Japan.

New Undersecretary of Navy

Mr. Ralph A. Bard, Assistant Secretary of the Navy since early 1941, was nominated by President Roosevelt for the post of Undersecretary of the Navy, the position left vacant when Mr. James Forrestal was made Secretary of the Navy on the death of Colonel Frank Knox. His nomination was confirmed by the Senate on June 21.

The Soviet Navy After Three Years of War

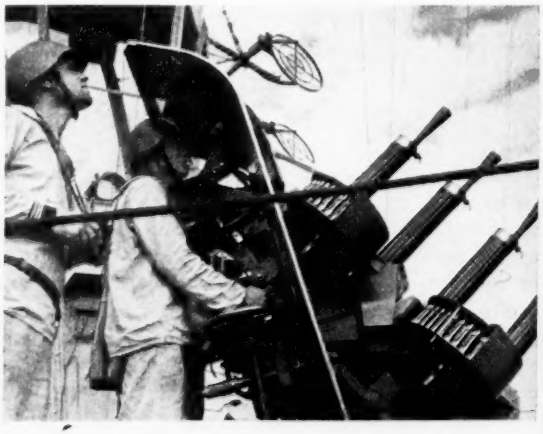
Cooperation between Russian Naval forces and land armies on more than one occasion turned the tide to victory in the war with Germany. *By Vice Admiral Yeudi Philderiwich Panteleyeu*

DAY after day for three long years a relentless struggle has been in progress between Soviet seamen and German Fascist invaders. The main task confronting the Red fleet in this war against Hitlerite Germany has been to protect strategic flanks on the land front from enemy naval action. This major task the Soviet navy has accomplished. The army has never been attacked on the flank or turned by the enemy from the sea, although the Germans did prepare and did attempt to launch such operations.

Soviet Baltic and Black Sea forces supported operations of the Red army, transported men, arms, and munitions. The Red army flanks were not only protected by small vessels and destroyers but by cruisers and battleships as well. Such was the case during the defense of Leningrad, Odessa, Sevastopol and operations on the Kerch peninsula. River flotillas operated side by side with the Red army. The part played by the Volga flotilla was exceptionally important during the battles for Stalingrad. River gunboats and floating batteries silenced German batteries and even engaged German tanks striving to break through to the Volga.

Fleet and land forces coordinated just as successfully when the Red army assumed the offensive. The Soviet navy operated on enemy sea routes, harassing the foe, preventing regular supply of

A unit of the Black sea fleet shelling positions of German and Rumanian troops.



Crew of an antiaircraft installation aboard a ship of the Black sea fleet meets attack.

A Soviet torpedo boat flotilla setting out on a fighting assignment against the Nazis.

German forces with reinforcements and armaments, and interrupting the flow of raw materials to German industry. Fleets of Soviet submarines and the Red air force inflicted blows on the enemy's seabases, ports and airdromes.

Naval guns of all sizes supported the flanks of Soviet troops during the sieges of Leningrad, Odessa and Sevastopol.

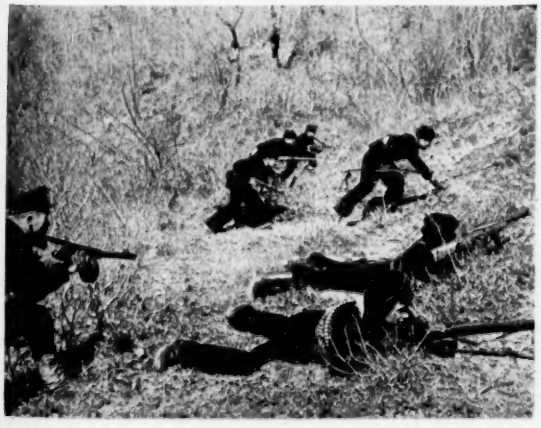
Combining its operations with those of the Red Army, the Soviet fleet played an important part in the defense of Hango, Tallin, Leningrad, Odessa, Sevastopol, Stalingrad and Novorossisk. It drew enemy forces away from other fronts, wore them down, and thus slackened the pace of the German offensive in the main direction.

The Germans made many attempts to concentrate on the Gulf of Finland, on Lake Ladoga, and on the Seas of Leack and Abov, with the object of undertaking outflanking maneuvers by land troops on the flanks and rear of Soviet forces operating on the coast. Thanks to timely attacks by the fleet, and measures adopted for coastal defense, these enemy plans were frustrated. After their failure to effect landings on Oesel island in 1941 and Sukho island in Lake Ladoga in 1942, the Germans never again attempted to land seaborne troops.

Attempts by the German naval command to blockade our country and destroy the Soviet navy in its bases, and cut sea communications connecting our country with our allies by means of submarine warfare, air attacks and application of mines on a wide scale, failed. All told, during thirty-seven months of war Soviet naval forces have sent to the bottom 740 enemy ships including thirty-seven destroyers, twelve gunboats, two coastal defense armor-clads, and one auxiliary cruiser. The number of auxiliary vessels and transports sunk totals 2097. Altogether, 2837 enemy ships were sunk.

In addition to all this, 6829 enemy aircraft were destroyed. From this number the fleet air arm accounted for 5308 planes and sank 1666 ships. The longer the war lasts the heavier becomes the blow by the naval air force; thus during the first two years of the war pilots destroyed 411 ships and during the last eleven months 1255.

A submarine chaser, part of the Black Sea fleet, hurls depth charges at enemy U-boats.



A group of Red Navy fighting men, part of the Black sea fleet, land in rear of foe.

Ships of the Baltic fleet on an operational cruise, gunners standing ready for action.

The Art of War

"My wars were bold, but methodical," said Napoleon. "The art of war lies in sometimes being very audacious and sometimes very prudent. Generally the most timid course is the poorest."

Compiled by David Whittet Thompson

The compiler of this essay, a student of military affairs now in the Armed Services, has this to say about his somewhat unusual contribution: "Scattered through Napoleon's correspondence, and embedded in various memoirs, there are fragmentary remarks on the art of war which he tossed off in conversation or dictated at white heat in his letters. I have woven them into an essay concerned not so much with Napoleon's tactics as with his principles of war."

HOW indispensable and imperatively necessary it is that those should possess knowledge who aspire to command over others. I have fought in sixty battles and I assure you that I learnt nothing from them that I did not know at my first battle. All plans of my fourteen campaigns were in strict accord with the true principles of war. My greatest successes have been ascribed merely to good fortune; and my reverses will no doubt be imputed to my faults. But if I should write an account of my campaigns, it would be seen that in both cases my reason and faculties were exercised in conformity with principles. My wars were bold, but methodical. Alexander the Great, when scarcely beyond the age of boyhood, with a mere handful of brave men, conquered a quarter of the globe. But was this achievement the result of a mere accidental eruption, a sort of unexpected deluge? No: all was profoundly calculated, boldly executed, and prudently managed. All the great captains of antiquity, and those who in modern times have successfully trodden in their steps, performed vast achievements only by conforming with the rules and principles of the art; that is to say, by correct combinations, and by justly comparing the relation between means and consequences, effects and obstacles.

No Set Formula for War

But genius acts through inspiration. What may be good in some circumstances may be bad in others. One ought to consider principles as an axis which holds certain relations to a curve. It may be good to recognize that on this or that occasion one has swerved from the fixed principles of war. Frederick the Great was one of those men who have best known their trade in all its branches, and he sometimes acted against all the rules of war. His audacity was remarkable. He succeeded in doing what I never ventured to attempt: he abandoned his base of operations and often behaved as if he were entirely ignorant of the military art.

Can war be reduced to certain principles, and is he who is master of these principles therefore master of the art of war? Certainly not. Although the study of tactics teaches how to maneuver troops, it requires genius to become a great military commander, which assuredly cannot be acquired by study. Cleverness is not wanted in war. What is wanted is accuracy, character and simplicity. In war obedience counts before every other quality—even bravery. No matter what happens, nothing should hinder a soldier from obeying orders; talent in war consists in overcoming obstacles in the way of an operation and not causing it to fail. A good army is one in which each officer knows what to do according to the circumstances. Why did the Romans accomplish such great things? Because it took six years to train a soldier, consequently a Roman Legion of 3000 men was worth 30,000 of their enemies. Yet I do not believe in the proverb that in order to command one must know how to obey. Although obedience must be exacted, insubordination may be only the evidence of a strong mind. Above all it is necessary to have common sense.

Headquarters at Osterode.

Unity of command is essential to success. There should be only a single general, but he should be unfettered in his judgment and operations. I believe that one bad general is better than two good ones. The art of war, like the art of government itself, is a matter of careful handling. The gov-

ernment must put complete trust in its general and allow him a free hand, if they wish him to attain the object at which it aims.

There ought not to be any generals over sixty years of age on active service. They ought to be given honorable positions in which they would have nothing to do. In war men are nothing, a man everything. The habit of fighting, superiority in tactics, coolness and presence of mind of the commander, make the conqueror or the conquered. A great general is no common thing. No matter what the energy of the government, an army of lions commanded by a deer will never be an army of lions. The general is the head, the whole of the army. It was not the Roman army that conquered Gaul, but Caesar; it was not the Carthaginian army at the gates of Rome that made the Republic tremble, but Hannibal; it was not the Prussian army that for years defended Prussia against the greatest powers of Europe, but Frederick the Great.

Position a Strong Point

The art of war does not require complicated maneuvers. The art of war is like everything that is noble and simple. The simplest movements are the best and common sense is fundamental. Why, then, do generals blunder?—Because they try to be clever. For me there are only three things in war: to cover thirty miles a day, to fight, and to rest. To be a good general you must know mathematics; it is of daily help in straightening your ideas. Perhaps I owe my success to my mathematical conceptions; a general must never imagine things—that is fatal. My great talent, the thing that distinguishes me most, is that I see things clearly and immediately perceive what is essential. The most difficult thing is to guess the enemy's plan, and sift the truth from the reports as they come in. The rest requires only common sense; it is like a boxing match, the more you punch the better. It is also necessary to have studied the maps well. Experience will teach you the difference between reports spread by the enemy and reality. You must have confidence. Don't be nervous: there is nothing to be afraid about; it is all empty noise.

The truth is essential to the efficiency of the army. It discredits the government to conceal information which can be picked up from every soldier who writes home from the front, and is tempted by such concealment to believe all the enemy's false reports.

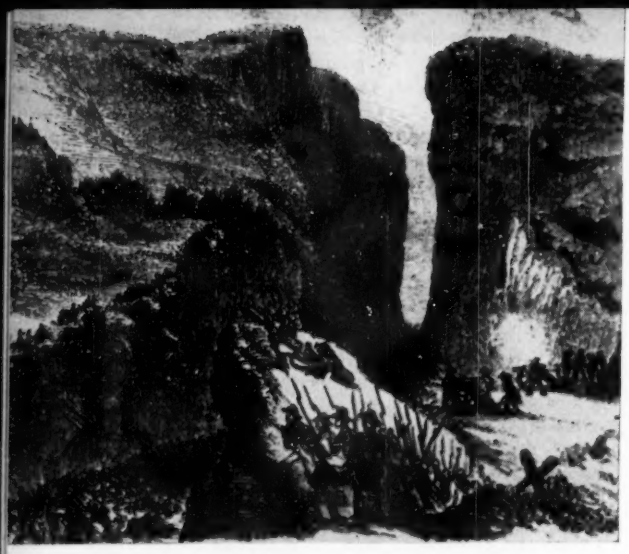
Misfortune has its good side. It brings you back to reality. If you are attacked and experience reverses, never forget three things: concentration of your forces, activity, and a firm resolve to die a soldier's death. These three great principles of the art of war have brought success to my side in all my operations. On the field of battle a man fights, he does not surrender, and if he surrenders except when overwhelmed, he deserves to be shot. A soldier would know how to die. My lads, you must not fear death; when soldiers brave death they drive him into the enemy's ranks. Bravery is only impatience at danger: courage is of the mind. Courage cannot be counterfeited, it is a virtue which is proof against hypocrisy. Death is nothing; but to live on, beaten and dishonored, is to die daily. It is only in danger that one takes pleasure in one's self. As to moral courage, which

Ascending the Landgrafenberg.

can only be acquired by the habit of facing danger, I have rarely met with the two-o'clock-in-the-morning kind, that which is necessary on an unexpected occasion, and which, in spite of the most unforeseen events, leaves full freedom of judgment.

The first quality of a commander in chief is a cool head which correctly mirrors objects, and is never heated or gets dazed or intoxicated by good news or bad. A great captain must say to himself several times a day: if the enemy appear on my front, my left, or my right, what should I do? If he finds himself embarrassed, he is illposted. If I always seem ready to answer everything and to face everything, the reason is that before engaging in any enterprise I have given long thought to it and foreseen what might occur. It is not that a genie suddenly whispers in my ear what I am to do or say in a situation that takes others by surprise; it is due to reflection, to meditation.

Generals are seldom found eager to give battle. They choose their positions—establish themselves—consider their combinations—but then commences their indecision. Nothing is so difficult,



The Gorge of Neumarkt.

and at the same time so important, as to know when to decide. One of the most important qualities of a general is firmness. And firmness is a gift from heaven.

We rarely find, combined together, all the qualities necessary to constitute a great general. The object most desirable is, that a man's judgment should be in equilibrium with his physical character or courage. If courage be a general's predominating quality, he will rashly undertake what he cannot execute; and, on the other hand, he will not venture to carry his ideas into effect if his character or courage be inferior to his judgment. With respect to physical courage, it was impossible for Murat and Ney not to be brave, but no men ever had less judgment, the former in particular. If strength and courage were all that are needed to make a general, every private could hope to command. The general who is capable of great things is he who possesses the finest civil qualities —insight, calculation, decision, eloquence, knowledge of men. He is obeyed and respected on account of his intellectual ability. Everywhere brute force bows before the man who possesses exceptional knowledge and understanding. If you listen to the soldiers talking round their bivouac fires, you will find that they think more of the officer who can plan and calculate than of the bravest fighting man.

Victory to the Wisest

In war nothing is won except by calculation. Every operation ought to be carried out according to a plan, because nothing succeeds by chance alone. The art of war lies in calculating the odds very closely to begin with, and then adding exactly, almost mathematically, the factors of chance. Chance remains forever a mystery to average minds. War frequently depends upon accidents. Although a commander ought to be guided by general principles, yet he should never lose sight of anything that may enable him to profit by accidental circumstances. The vulgar call good fortune that which, on the contrary, is produced by the calculations of genius. The art of war lies in sometimes being very audacious and sometimes very prudent. Generally speaking, however, in war the most timid or prudent course is nearly always the worst one. For example, it is an axiom of military science that any army which remains behind entrenchments is beaten. Experience and theory agree on this point. I consider that my audacity in war has never been equalled.

Marshall Forces Judicially

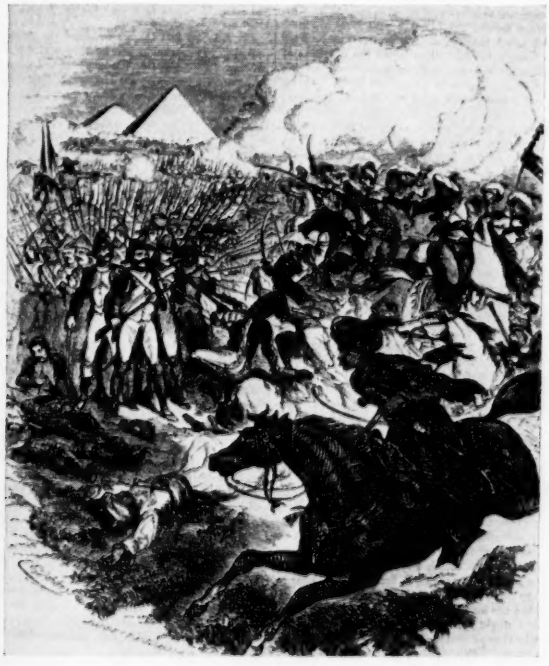
Time is everything. Time has a very different value in war from its value in peace. Delay in war is deadly. Every hour of lost time is a chance of future misfortune. Strategy is the art of making use of time and space. I am less chary of the latter than of the former. Space we can recover, lost time never. While others are thinking, I am doing. I may be accused of recklessness, but never of slowness. Nevertheless, impetuosity is not the way to gain one's ends. Be slow in deliberation and swift in execution. I like to follow the methods of the poets and lead up to a dramatic denouement. There is no greater coward than I when drawing up a plan of campaign. I magnify every danger, every disadvantage that can be conceived. My nervousness is painful; not but that I show a cool face to those who are about me. I am like a girl who is going to have a baby. When once my decision is made, however, I forget all, except what may carry it through to success. A general must never for any minor consideration miss his chance of destroying the enemy. There are in Europe many good generals, but they see too many things at once; as for me, I see only one thing, namely, the enemy's main body. I try to crush it, confident that secondary matters will settle themselves.

In war the game is always with him who commits the fewest blunders. The able man turns everything to profit, and neglects nothing that may give him one chance more; the man of less ability, by overlooking just one thing spoils the whole. It is only a step from victory to disaster. My experience is that in a crisis, some detail always decides the issue. There is no such thing as a small matter in war. Nothing compromises an army so much as careless security. In warfare every opportunity must be seized; for fortune is a woman: if you miss her today you need not expect to find her tomorrow. There is a point in engagements when the least maneuver is decisive and gains the victory; it is the drop of water that makes the bucket run over. The fate of a battle is the result of a sudden thought: the hostile forces advance with various combinations, they attack each other and fight a certain time, the critical moment arrives, a spark of inspiration decides the issue.

When you would deliver battle, assemble all your forces, not neglecting one; a single battalion

sometimes decides the day. Providence is on the side of the last reserve. They say that I have more talent than some others, and yet even to defeat an enemy whom I am accustomed to beat I feel that I never have enough troops. However, victory is decided more by moral force than by mere numbers. In all battles a moment occurs when the bravest troops, after having made the greatest efforts, feel inclined to run. The terror proceeds from a want of confidence in their own courage, and it requires but a slight opportunity, a pretense, to restore confidence in them. At Arcole, I won the battle with 25 horsemen; I seized that moment of lassitude, sent them on the flank of the enemy with the trumpets sounding the charge, and gained the day with this handful. You see that two armies are two bodies which meet and try to frighten each other; a moment of panic occurs, and that moment must be turned to advantage.

One of the highest and most rare talents of a general consists in profiting from the mistakes of the enemy and promptly repairing a reverse. Any man can draw up a plan of campaign, but few are capable of making war, because only a genius can act in accordance with events and circumstances. That is why the best tacticians are often the worst generals. Woe to the general who comes on the battlefield with a system, who draws up his



Battle of the Pyramids.

plans the day before the battle, before he knows his adversary's movements or what position he will have to occupy. For my part, I never issue orders long in advance, and am especially cautious over night. At peep of day I send out my scouts, survey the field for myself, and keep my troops in mass formation as long as I am still in doubt. I have never, during the score of years that I have exercised a command, given counter orders to a regiment because I always wait until matters are ripe and understood before I begin operations. When ready, I issue orders so that everyone knows what he has to do and there is no confusion. Then I hurl myself at the enemy, attacking him wherever the ground makes attack most favorable.

Grand Secret Revealed

The great art of a general consists, if he knows himself to be inferior in numbers to the enemy, in proving himself superior on the field of battle. When, with the smaller force I was in the presence of a large army, rapidly grouping my men I fell like a bolt of lightning upon one of its wings and smashed it. Then I took advantage at once of the disorder into which this maneuver never failed to throw the hostile army, to attack it at another point, always with all my forces. Thus I defeated it in detail and the victory which resulted was always, as you see, the triumph of the larger number over the smaller. There should be no question of dispersing your forces. On the contrary, you must combine them. The impact of an army, like the total of mechanical co-efficients, is equal to the mass multiplied by the velocity. The art of war consists in always having a stronger force than your opponent at the point at which you are attacking him, or at which he is attacking you, even though your army is weaker than his.

The invention of firearms has wrought a total change. This great discovery operates entirely to the advantage of the assailants, though many modern writers have maintained the contrary opinion.

Great battles are really won with artillery. Men now fight with blows of cannon balls as they once fought with blows of fists. In battle, as in siege, the art consists mainly in making numerous discharges against one and the same spot. Amidst the conflict, he who has sufficient address to direct a mass of artillery suddenly and unexpectedly upon any particular point of the enemy's forces, is sure of victory. That has been my grand secret, and my grand plan of tactics.

When one wills strongly and constantly, one succeeds, but it needs prudence, wisdom, and a fair share of dexterity to surmount every obstacle and attain great ends. True industry does not consist in executing by known and given means; the proof of art and genius is to accomplish an object in spite of difficulties and to find little or nothing impossible. I can say what no other captain of war can say, not even Frederick the Great, that for twenty years I outmarched all the armies of Europe. Mobility is the keynote of war. Activity, activity, speed. He who fears to lose his glory will lose it. The aspect of danger was constantly before me. I

The Disembarkation

enjoyed not one moment of repose. The victory of today was forgotten in preparation for the battle which was to be fought on the morrow.

The art of war as a whole cannot be expounded, because it has never yet been put on paper—if, indeed, it ever will be. The real conquests, those which leave no regrets, are those made over ignorance. I have always regarded a general peace as the first condition of the regeneration of Europe. Peace is a marriage which depends upon a union of wills. Let us give peace and repose to the present generation. If future generals are so foolish as to fight—well, after a few years of war they will learn wisdom and live at peace with one another.

Brave soldiers wage war and desire peace. But peace alone was not enough, I wanted a glorious peace. My honor first, and then peace. You cannot know what passes through a soldier's mind. I grew up in the field and a man like me does not count the lives of a million men.

To be successful as a conqueror, you must be fierce. If I had been fierce, I should have conquered the world. The English are quite a different race from us; they have something of the bulldog in them; they love blood. They are ferocious, they fear death less than we do, have more philosophy, and live more from day to day. England rests her efforts upon a foundation as deep as the earth; my foundation was upon sand. The institutions of England are those of the ages; England reigns over things established and immoveable. With an English army I would have conquered the world and their discipline would not have slackened on the long way. After suffering ten defeats like that of Waterloo, not a man, not a voice in Parliament would have deserted me, if I had been the man that England trusted, instead of France; at last I should have won the game.

Strategy in a Life Raft

Commander Gus Widhelm's favorite story, and the favorite of most of the Marine pilots who were associated with Gus when he was serving as the skipper of a Navy night fighter squadron based at Munda, is destined to become a classic of this war.

Early in 1942, Commander Widhelm was the commanding officer of the *Hornet's* crack SBD squadron, "The Bombin' Fools." During one of the first hit and run carrier plane raids on the Jap-held Marshall Islands, Gus' plane was so severely damaged by antiaircraft fire that he was forced to make a crash landing at sea less than half-way back to the carrier. He and his radioman found themselves alone in a rubber boat in enemy waters. The task force, the only friendly force within hundreds of miles, was steaming full speed away from them.

As soon as he was settled in the life raft and all the loose gear had been lashed down securely Gus stretched out and calmly prepared to go to sleep. But the radioman was of less even disposition. "Commander," he demanded excitedly, "aren't we going to row?"

"Nope, too much work."

This quieted the sailor down temporarily, but just as Gus was dozing off the radioman got another idea: "Commander, why don't we set a sail?"

"No wind."

Again there was a period of silence, during which the crewman thought the matter over. Again Gus was awakened by an earnest question: "Well, Commander, if we don't row and we don't set a sail, where will we end up?"

"Truk," said Gus, who was annoyed by the constant interruptions. This answer sent the radioman into a spasm of laughing and chuckling. "What the hell's so funny about that? Don't you know that Truk is the strongest Jap base this side of Tokyo?"

"Yes sir, that's just the point. Won't those bastards be surprised when the two of us attack Truk!"—Capt. Warren H. Goodman.

In keeping with the **Highest Traditions**

Navy honors "Father of Marine Corps Aviation" by naming destroyer after Lt. Col. Cunningham, first flyer to wear wings in the Marine Corps.

ONE DOES not have to go back to the days of wooden ships to unearth the names of pioneers in Marine Corps history. One of the Corps' trail blazers, Lieutenant Colonel Alfred A. Cunningham, who entered the Corps in 1909, is universally recognized as the father of Marine Corps Aviation.

In 1911, 2nd. Lt. Cunningham took off from an improvised catapult on the parade grounds of the Marine barracks of the Philadelphia Navy Yard. The flight was made in a pusher type plane which Lt. Cunningham provided at his own expense. The ground crew was made up from volunteers among the Marines stationed at the Navy Yard. There was no propeller expert among them, so Lt. Cunningham fashioned a crude wooden propeller. The balance was not so good, and the plane came to be known as "Noisy Nan." Despite failures, ridicule, disappointments, and rebuffs, Lt. Cunningham persisted in his efforts to be assigned to aviation duty. On May 16, 1912, he was detached from the Marine barracks at Philadelphia and directed to report to the superintendent of the Naval Academy at Annapolis "for duty in connection with aviation." May 22, the day he reported, can be regarded as the birthday of Marine Corps aviation. After two hours and forty minutes of dual instruction, Lt. Cunningham made a solo flight and became the first Marine Corps aviator. (He was Naval aviator number five.)

Severely Injured in Crash

In August, 1913, Lt. Cunningham requested that he be detached from aviation duty and assigned to the Washington Navy Yard as post quartermaster. He gave as his reason: "I desire to marry and my fiancee will not consent unless I give up flying." The request was granted, but Mrs. Cunningham's prejudice against flying was not long-lived, because in February, 1914, the post quartermaster of the Washington Navy Yard was assigned to temporary duty as a test pilot.

One year later, Lt. Cunningham requested a reassignment to aeronautical duty. In May, 1915, he was ordered to Pensacola for instruction, and assignment to aviation duty. In 1916, he offered himself as a "guinea pig" to determine whether a plane could be catapulted from a ship *underway*. As a result of engine failure Cunningham's plane struck the water and he and the plane were "run over" by the USS *North Carolina*. He suffered injuries, from which he never fully recovered.

Shortly after his return to Pensacola, Cunningham, now a captain, was ordered to Philadelphia to establish, equip, and command the first "Aviation Company, Marine Corps Advanced Base Force." In October, 1917, this unit moved from Philadelphia to the army field at Minneola, Long Island. About this time, Captain Cunningham was ordered overseas to inspect and study English and French aviation activities. While in France, Capt. Cunningham participated in flights over the German lines. He returned to the United States early in 1918 and assumed command of the "First Marine Aviation Force" at Miami, Florida. As commanding officer of that unit, with the temporary rank of Major, Cunningham arrived in France in July, 1918, with 109 officers and 600 enlisted men. After the formation of the Northern Bombing Group, four Marine squadrons were designated as the Day Wing of that group and took part in fifty-seven bombing missions. Maj. Cunningham was awarded the Navy Cross for his activities as commanding officer of the First Marine Aviation Force. Upon his return to the United States he became the first officer-in-charge of Marine Aviation, serving in that capacity until 1920. The following year he was commanding officer of a squadron attached to the Second Brigade in Santo Domingo. During that tour of duty, the squadron piled up a record of 9300 flying hours without serious mishap, for which Major Cunningham was commended by the Chief of the Bureau of Aeronautics.

In August, 1935, after twenty-six years of service, Major Cunningham retired from active duty. One year later he was promoted to the rank of Lieutenant Colonel on the retired list. He died May 27, 1939, at the age of fifty-seven.

In recognition for Lt. Col. Cunningham's contribution to Marine Corps aviation, the navy recently honored his name with the launching of the destroyer USS *Alfred A. Cunningham.*

The United States Staff

An unsettled military staff organization, product of our Continental Congress, was not straightened out until the beginning of the 20th Century; European staffs were years ahead of ours. *By Lt. Col. James D. Hittle*

ON JUNE 15, 1775, the Continental Congress unanimously elected George Washington "to command all the continental forces, raised or to be raised, for the defense of American liberty." The following day the members of the Continental Congress proceeded with the business of providing a staff for General Washington's army. Thus began the history of the staff system of the United States Army, a phase of our military development which was destined to lag behind staff systems of France and Prussia for 125 years.

The staff system introduced into the Continental forces was a product of the unsettled mind of the Continental Congress. This unsettled atmosphere seems to have been implanted into the staff organization of the Continental Army, and it was not completely eliminated until the present staff system was adopted at the beginning of the 20th century. The British Army furnished the basic pattern for the organization of the military staff system to be utilized by the forces under Washington's command. Washington was essentially a product of the British military system, both from the standpoint of military education and active field experience.

On assuming command of the Continental Army, Washington appointed Joseph Reed his military secretary. That was about all the free choice the Commander-in-Chief was initially able to enjoy in the formation of the army staff, since the Continental Congress was extremely begrudging in its attitude toward the military commander and was reluctant to delegate to him even the normal military authority commensurate with his rank.

As far as the headquarters staff organization itself was concerned, it was readily apparent that it was largely inspired by contemporary British organization, as the titles of the officers of the staff were essentially the same as those prevailing in the British Army staffs. The bulk of the legislation pertaining to the army staff was passed on the 16th of June, 1775. On that date the following staff officers were authorized by the Continental Congress: The Adjutant General, Quartermaster General, Commissary General of Stores and Provisions, Paymaster General, Commissary General of Musters, and a Chief of Engineers. On the 19th of July, 1775, two more staff officers, a Wagon Master and a Commissary of Artillery Stores, were authorized. The Medical Department for the army was authorized July 27, 1775, two days before the first Judge Advocate General was appointed by the Continental Congress.

As the war progressed, Washington became continually more burdened with the non-military administration of the army, to the point that he did not possess the necessary time to devote to the training and maneuvering of his troops. In the hope of finding some relief from such matters, he advocated the establishment of a War Office, which he optimistically hoped would assume some of the administrative management of the army. Washington voiced his view in this matter in a letter dated June 13, 1776, to the President of Congress. Probably more coincidence than the result of any sincere effort to give Washington efficient service, the Congress that same day created a Board of War.

This Board of War, according to Major General Corbin, who directed the compilation and annotation of the legislative history of the General Staff, was the "germ of the War Department of our Government." Although the foundation of the War Board was of historic importance in the eventual evolution of the General Staff, it was of little immediate value to Washington.

Washington Hampered by Congress

The manifest lack of uniformity in troop training and command procedure resulted in the creation of the office of Inspector General in December of 1777. For some time prior to the establishment of this office, Washington had considered various means of trying to instill efficiency and universal methods into his army. D'Arendt is given credit for offering the solution accepted by Washington as the most practical. He suggested a special agency be formed in the staff and that this new agency, the office of Inspector General, be charged with the training and discipline of the entire army. Still unable to take the necessary action on his own authority, Washington wrote to the President of Congress recommending the immediate authorization of the inspectorship. The matter, after considerable delay, was referred to the Board of War, the creation of which Washington only a few months before had so enthusiastically and optimistically applauded. Now, instead of giving much needed support to the Commander-in-Chief, the Board was the center of the Gates-Conway intrigue seeking to undermine Washington's authority. Guided by such base motives, the Board proceeded to authorize the inspectorship, but instead of following Washington's recommendation that the office be part of his staff, made the Inspector General inde-

Baron Frederick von Steuben, who brought the Prussian staff system to the U. S. Army.

pendent of the Commander-in-Chief and responsible directly to the Board of War.

Conway had proposed the plan by which the Inspector General was made independent of Washington, and it was this same conspiring Conway who was appointed to the position of Inspector General. However, Conway didn't last long. He was appointed December 13th, 1777, and by the end of the month, Washington's frigid courtesy had made the headquarters so unpleasant for Conway that he returned to New York and resorted to complaining in letters to Congress.

About a week after Conway retired, Washington received a letter from Baron Frederick von Steuben, who had just arrived in Portsmouth, New Hampshire, from France. Washington soon found Steuben to be admirably suited for appointment as Inspector General. At last he had a qualified staff officer, capable of bringing efficiency and uniformity of method to the ragged army. Steuben, a product of the staff system of Frederick the Great, brought Prussian method and efficiency to Washington's staff. He was possessed of almost twenty years of experience in the Prussian armies, a good portion of which was spent in the staff. After gaining field experience in the Prussian armies during the Seven Years War, Stueben's staff education was further developed when he was assigned as a student in the school established by Frederick at the end of the war for the purpose of training promising officers in the higher military art. This school marked the beginning of higher educational training of officers, which was to become the foundation of German staff efficiency. Being a charter student of the Prussian military educational system, Steuben was one of the first "schooled" staff officers of the modern era. His experience, supplemented by theory, made him the kind of officer that Washington could well use on his staff to aid him in training America's citizen soldiers.

Lessons for Modern Officers

The manner in which Steuben took an unorganized, untrained, inefficient, and unschooled army and developed it into the finest light infantry of the times is well known to readers of Revolutionary history. But his influence did not stop with training the junior officers and enlisted troops, for his presence in the headquarters resulted in a noticeable improvement in staff procedure. There are many examples of Steuben's work as a staff officer in Washington's command. Although he was officially the Inspector General, he functioned as an all-purpose staff officer, constantly proving himself to be an able graduate of the school of Frederician doctrine. At Monmouth, for instance, Steuben, a Major General, labored continually as an intelligence officer, and the manner in which he conducted the aggressive reconnaissance of Clinton's forces is worthy of the study of any present-day intelligence officer.

Later, at Yorktown, the staff training of Steuben was clearly apparent in the general orders issued by Washington for the conduct of operations against the British positions.

His duties as a staff intelligence officer did not end with active reconnaissance, for frequently, at Washington's request, he prepared sound analyses of British and American capabilities and limitations. Steuben wrote one of the "Estimates of the Situation" after the capture of Stony Point. Considering the possible means of taking offensive action, he felt that the preponderence of British power was so great that he suggested the policy of alert waiting on the Hudson, which suggestion Washington adopted. He submitted another "estimate" in the summer of 1780 in which he gave due consideration to the increased efficiency of the Continental troops and the prospect of aid from France. Subject to the realization of French aid, he recommended plans for placing the army

in readiness to exploit the help if it arrived. In the fall of that same year, after the colonies had failed to furnish their quota of troops and after the delays of the French, he made another "estimate" in which he analyzed the most effective plans for continuing the war since the hoped-for increase in strength had not been realized. According to Palmer, Steuben's most authoritative military biographer, all of these "Estimates of the Situation" were "highly competent general staff documents." Steuben was ahead of his associates in appreciation that the basic mission of the staff was to relieve the general of the unimportant details of command.

Our First Staff Officer

It was in one of his letters to Washington, defending the activities of his system of inspectorships, that he expressed his basic theory of the staff. He wrote on this occasion: "I was endeavoring with the Gentlemen under me, to make the Officers and Soldiers a little more perfect, in order to enable the Officers to pass immediately to Grand Maneuvers, and save them the trouble of descending to those Toilsome and fastidious details . . ." In his 18th century manner of speaking, Steuben was merely explaining his concept of the primary duty of the staff—to assist the commander in the exercise of his duties of command in such a way as to free the commander's mind from the routine business in order that he can calmly concentrate on the employment of his troops. Field Service Regulations today may not use the same words as Steuben employed in expressing his ideas of the mission of the staff, but the thought is identical with that enunciated by the Baron 150 years ago.

Baron von Steuben was an important figure in the staff history of the American Army. He made the staff wisdom of the Prussian system available to the Revolutionary leaders, who with the exception of a few such as Washington, Greene and Wayne were incapable of comprehending that Steuben was a valuable aid to the revolutionary military effort, primarily because he was a trained staff officer. Literally and figuratively, Baron von Steuben was the first qualified staff officer of our army. Had our infant army profited from the teaching, example, and admonitions of von Steuben, the staff history of the following years would have made more enjoyable reading.

Many changes took place in the staff system of the Continental Army in the course of the war. One of the most important concerned the Quartermaster General's Department. As the result of European influence, the quartermasters possessed the same general duties as did the quartermasters in the British armies of the period, these duties including some of the operational staff functions. In July of 1780 a law was enacted which made no mention of the regulation of marches, selection of campsites or any of the European quartermaster functions. Instead, it emphasized the supply aspects of the office, thus establishing the quartermaster as essentially an officer concerned with the supply of the military forces. This concept has remained to the present.

Joseph Reed, appointed by Washington as his military secretary in America's army.

As in the British system, the adjutants of the various staffs usually were the dominant staff officers of the various command echelons. They not only controlled the personnel administration of the units, but much of their prestige was attributable to the fact that they were the staff officers through whom most of the general orders were issued. While there was this vague pattern of the staff system throughout the Army, there was no set system as we think of a staff today.

Washington bequeathed a legacy of valuable advice to his country. Had it been heeded, none of his admonitions would have paid greater dividends in military efficiency than this statement: "The appointment of general officers is important, but those of the general staff all important."

The legal origin of the General Staff in this country seems to go back to the Army legislation of 1796, by which act the General Staff of the Army was to consist of one major general, one brigadier general, one inspector to do duty as adjutant general, one quartermaster general and one paymaster general. This staff organization was slightly modified by the legislation of March 3, 1797, which authorized a General Staff con-

sisting of one brigadier general, one quartermaster general, one paymaster general and one judge advocate.

According to this law, the brigade majors of the field staffs were to be selected from among the officers of the line. The Army legislation gave little consideration to the problem of creating a staff for the direction of the Army. One of the significant congressional acts of the early 19th century was the law of 1805 that authorized the establishment of the military academy at West Point. By this law, military education became part of the nation's military system, yet it was not the type of military education that was to produce trained staff officers. Schools for higher military education for commanders and staff officers were not to become a reality for many years.

As the probability of war with Great Britain became constantly more apparent in the opening years of the 19th century, Congress authorized increases in the regular Army, but gave no indication of heeding the admonitions of Washington that a staff was important to the conduct of a war. Staff knowledge of the kind that was guiding the vast operations of the armies of the Napoleonic wars, then in full swing on the European continent, was practically non-existent in the United States military organization.

McClellan Under Fire

At the time of the outbreak of war with Great Britain, the officer personnel of regimental command echelons consisted of one colonel, one lieutenant colonel, one major, one adjutant, one quartermaster, one paymaster and one surgeon. The composition of the regimental staff indicated that practically no change in field staff organization had taken place since the Revolution. Our regimental staff organization was at this time essentially the same as had been the regimental staffs of Gustavus Adolphus.

The War of 1812 was not characterized by efficient staff functioning. The years following the war did not produce any significant attempts to provide this country with a General Staff.

The wars from 1812 to the Mexican campaigns produced some good brush-warfare tacticians and accomplished Indian exterminators, but this period of the nation's military history contributed little to the development of staff knowledge or practice. Any staff efficiency that was realized in the troop commands was not inspired by the War Department staff system. That our War Department lacked the mechanism for making General Staff plans for war was evident from the admission of the Quartermaster General, who wrote in December of 1845:

"As to the complaint in regard to want of land transportation, it is proper to remark that there was no information in Washington, so far as I was informed, to enable me or the War Department to determine whether wagons could be used in Mexico." Any national military organization that did not have the necessary information as to whether wagons could be used in an adjacent country, potential enemy territory, possessed a General Staff that qualified in name only.

When the first shot was fired at Fort Sumter, the United States Army had essentially the same staff system as had existed during the years following the Revolutionary War. The Army regulations of 1861 provided for a staff organization containing no important departures from previous Army doctrine. It was under these regulations that the Northern and Confederate staffs were organized. This staff doctrine may have been satisfactory for the headquarters of anti-Indian patrols, but it proved to be inadequate to the task imposed upon it at the beginning of the operation of 1861. McClellan felt the pinch of an unsatisfactory staff system almost immediately after taking over the command of the Army of the Potomac. Military historians have not been too easy in their criticism of McClellan for his indecision and lack of aggressiveness in the opening phases of the war. Those critics should have also directed their attention to his predecessors in the Army high command who had failed to heed the warnings of Steuben and Washington, and who consequently failed to provide the staff system that could efficiently direct the formation, training, supply, and field operations of such a large force as comprised the Army of the Potomac. McClellan's position at the opening of the hostilities was much the same as that of Washington in 1775. Both were given troops but not the necessary staff system to go with the command.

McClellan's lack of trained staff officers was probably the direct cause of his failure to establish an efficient intelligence organization within his staff. Not having the advantage of possessing his

This is the first of two installments condensing one chapter of an important forthcoming volume entitled, *The Military Staff —Its History and Development,* by Lieutenant Colonel James D. Hittle. It will be published early in the Fall by the Military Service Publishing Company. The book is a survey of military history and development, covering the staff organization and forces of the armies of France, Germany, Great Britain, and the United States. This is the first time that material of this sort has been put into the English language and it is a valuable contribution to the study of communication and organization in our armed forces.

own intelligence section, McClellan relied almost exclusively on Pinkerton's Detective Agency. Pinkerton's agents may have been proficient at catching safe crackers and holdup men, but they were a poor excuse for trained intelligence officers.

Europe Forges Ahead

The staff system developed by the experience of the Civil War eventually proved to be a satisfactory system. It had some of the requisites of a staff system, such as delegation of authority, supervisory power, and to a lesser degree, it possessed canalization of staff business. But the benefit of the experience of the war was not to become a part of the staff knowledge of our Army because the system was not based upon the primary requisite of a true General Staff—an educational foundation. Without the educational system for training staff officers, the system was only as durable as the memory and life span of the officers who made up the staff.

While the Prussian General Staff was readying its armies for the 1870 blitz against France, while England was beginning to take official action directed toward the improvement of her staff system, this country continued with the same system that had existed prior to the Civil War. As our staff knowledge of the Civil War gradually disappeared and as the European staff doctrine improved, the United States rapidly dropped behind the military powers of Europe in all matters pertaining to the staff. Even France, whose system was to prove so inadequate before the perfected staff plans of Prussia, possessed a staff system that was fundamentally far in advance of the staff doctrine of this country.

Most of the discussion of the postwar years concerned the old question of relationship and authority of the various bureau chiefs, the Secretary of War and the Commanding General of the Army. The bureau chiefs reported to and acted directly under the Secretary of War, who was the civil head of the Army. This peculiar system, dating back to the Revolutionary Board of war, resulted in a triangular control consisting of the Secretary of War, the Commanding General of the Army and the chiefs of the various bureaus, who were erroneously called the "General Staff."

Thus, the hydra-headed organization of the War Department continued through the War with Spain. The sinking of the *Maine* found our staff system in much the same condition as it was at the time of Bunker Hill and Fort Sumter—inadequate for the task confronting it. When war finally broke out against Spain, there were plenty of troops but very few qualified staff officers. The hectic confusion at the ports of embarkation was easily equaled by the debarkation on the south coast of Cuba. Again the United States, claiming to be a world power, went to war without benefit of the staff planning that makes a nation militarily powerful. Had the disorganized military effort of 1896 been directed against France, possessing a rejuvenated staff, or against Germany and the Great General Staff, results would have been far different from the victory that was finally attained against the decadent military power of the tired Spanish monarchy.

It had been over a hundred years since Washington had advocated an efficient General Staff; about twenty-five years since McClellan had warned of the conditions that would result from the failure to establish a sound educational system for staff officers; about the same length of time since the Sherman Board had moved for a more logical organization of the War Department. The sum total of all these previous efforts was a military system geared for peace instead of war. Staff knowledge had still not drifted across the Atlantic.

Bible Records Staff Action

One of the oldest examples of the efficient work of a staff is found in the 17th Chapter of the book of Exodus. When Moses was leading the children of Israel through the wilderness, he was opposed by a tribe under Amalek. Moses ordered Joshua to choose some men and go out and fight against Amalek.

Moses, as commander in chief, with Aaron and Hur as assistants or staff officers, supervised the operation. The operation was described as follows:

"And it came to pass, when Moses held up his hand, that his own forces prevailed; and when Moses let down his hand the enemy prevailed. But Moses's hands grew heavy, and he sat down upon a stone, and Aaron and Hur stayed up his hands, the one on one side and the other on the other side; and his hands were steady till the going down of the sun. And Joshua routed Amalek with the edge of the sword."

Thus we see that when a commander could do the work necessary for victory he was successful; but by doing all the work himself he soon became exhausted and required assistance; and it was only the assistance of a staff which helped him do the necessary work to bring victory, to win a complete victory. Note, however, that it was the hand of the commander that brought victory—Aaron and Hur as staff officers only assisted in holding up the hand, thus carrying out the will of the commander and doing the detailed work necessary for victory. —Anonymous, quoted in *Military Review*.

Cape Gloucester Engineers

Marines won the "impossible" New Britain campaign because the Japs couldn't see how an invader could cut their defenses; they didn't count on engineering skill. *By S/Sgt. Donald A. Hallman, Sr.**

THE JAPS just couldn't see how American Marines could wrest a foothold on vital New Britain from them. It was doubly guarded by man-made fortifications and nature's bag of reefs, tropical rains and swamps. It was an "impossible" campaign in the eyes of Imperial Japanese headquarters. But headquarters didn't weigh Yankee ingenuity and "guts" into their figures.

The "impossible" job was written off in a series of brief communiques: "American Marines landed on Cape Gloucester this morning securing an 1800 yard beachhead," . . . "Target Hill, eastern objective of the Cape Gloucester landing forces was captured within three hours." . . . "Japanese counterattacks were repulsed." . . . "General Sherman tanks smashed enemy resistance." . . . "Enemy counterattacks were repulsed by Marines in their drive down Borgen bay." . . . "Marines captured Hill 660 today." . . . "Large Marine patrols continue active."

Behind the terse communiques stands a history of building roads through seemingly bottomless swampland, literally holding back the sea from the narrow landing beaches, and taking tanks and artillery through the liquid battlefield to Target Hill in the middle of a deep swamp. Without even a path leading to it, Target Hill was the key to a successful invasion of Cape Gloucester.

So the Japs sat secure, grinned a toothy grin and said "Can't see it, Marines!"

Engineers made them see it. Three groups of engineers, which train together under one administrative setup but are split into separate teams in combat, landed with Marine infantrymen. The enemy withdrew to his prepared defenses and waited for the invader to bog down. Without artillery, tanks, and supplies the infantry would spend years battering against the hundreds of pillboxes, gun emplacements and camouflaged snipers, so the Japs thought.

Unloading Proceeds Smoothly

Units of Marine Pioneers landed with the first wave, set up beach markers, located supply areas, and designated road routes. To the Pioneers falls the task of securing and holding the beach, unloading ships, and standing in reserve to aid assault troops. The other engineer teams are Marine Assault Engineers who build bridges and roads, knock out enemy emplacements, and plant demolitions where they are needed, and the Sea Bees, naval construction men who supply highly skilled artisans recruited from civilian trades to build bridges, roads, piers and airfields.

When the landing ships beached an hour after the first Marine wave came ashore all preliminary work had been completed. Engineers aboard the landing vessels promptly built thirty-five yard sandbag ramps in the surf for unloading trucks, engineering equipment, and artillery. Fourteen heavily laden LST's were unloaded by midnight.

Meanwhile artillery units were trying to get their guns up to positions almost a mile inland. They coudn't get through the swamp. Cursing men struggled in knee deep slime to free their tons of sorely needed equipment. They only bogged deeper. A bulldozer was ordered from the beach and began a struggle of machine against bog. That night the heartening cadence of 105s and 75s could be heard back in the swamp. The artillery had gotten through.

Heavily bombed, strategic Target Hill fell to Marine infantrymen who waded through 400 yards of neck deep swamp to reach it. They took the hill but faced the chance of losing it unless supplies and guns could be gotten through to them. Assault engineers were already at work when the infantrymen seized the hill. A 400 yard bridge was impossible, so giant trees were felled, laid end to end, then chipped flat to provide a footing. Lumber was brought up from the beach and nailed from tree trunk to tree trunk . . . nailed to anything secure. In two days 100 engineers, working in water up to their necks, finished a 400 yard boardwalk, even to wire handrails.

Constructing roads and bridges was not the only role of the engineers. After unloading ships all day on the second day after the landing, the engineers were ordered to the front lines to support hard pressed infantrymen. They battled swamp muck and heavy rains for four hours to reach the lines, where they set up secondary defenses, carried machinegun ammunition, and helped the wounded back to field stations.

The Sea Bees landed with their heavy road building equipment and started rebuilding the road from the beach to the airport while Marines were still smashing at a series of pillboxes and howitzer emplacements along the beach. The enemy was strongly entrenched near the airport and every piece of combat equipment was needed at the front. A road had to be pushed through. The one the Japs had hacked out of the swamp was a trail,

* U.S.M.C. Combat Correspondent

Marines lay sandbag road under three foot surf off the beach at New Britain Island.

nothing more. The Sea Bees literally pushed back the ocean, tore out the jungle, filled the bogs, and got the machines, tanks, tractors, and men through.

The third afternoon tanks and infantrymen crushed Jap lines, knocking out fifty pillboxes, twenty mountain howitzers, and killing more than 400 Japs. That night American lines were established beyond a point of land which extends half a mile into the sea. The "lines" were under water, but before the advance on the vital airfield began the following morning Sea Bees were already building a road through the swamp.

When the airfield fell to the Marines, a seven mile road was completed. On it were thirteen bridges. Later the Sea Bees constructed nineteen heavy duty spans for double lane traffic. They also built more than a mile of timber seawall to hold back the high tides.

The airport presented another engineering problem. Army men were landing to put the fighter and bomber strips in commission but they had to unravel the knot of how to get their tons of heavy equipment to the airfield. It was one of those "impossible" tasks that the Jap couldn't see. Navy construction men built three bridges across deep gorges, they built two roadways through the swamp and started another permanent highway along the beach. The army's equipment was on the airfield the day after its capture.

While these engineering miracles were transpiring the infantry ran into stiff resistance from pillboxes along thickly wooded river banks on the central front. Tanks were needed to smoke the Japs out, but they could not cross the swamp. Working without rest, engineers completed a thousand-yard road across the bog. The tanks got through and erased the resistance in that sector.

A second sector, on the extreme right flank of the central front, was a mile away by road—if there had been a road. Swamp and three rivers separated the two areas. Beyond the swamp, Marine infantrymen were pinned down by hundreds of snipers and a line of pillboxes. Again tanks were desperately needed and again the engineers conjured up a road . . . but only after a battle with the enemy whose flank was just seventy-five yards from where the road started.

An engineer corporal operated one bulldozer as work on the first bridge was started. Snipers knocked him from the seat. A sergeant and a PFC crawled to the machine and operated the levers with an ax and a shovel handle. The sergeant was dropped by a sniper's bullet. Another sergeant took his place and finished the approach to the bridge. Twice his helmet was knocked off by Jap bullets; his machine was struck eight times. He was uninjured. The engineers continued to work, exposed to enemy fire, even while their buddies were wounded alongside them. The road and bridge were built. The tanks got across.

Later the engineers were called upon to remove booby traps and mines from the bodies of 200 Japanese within 100 yards of where the bridge had been built. The enemy had fled when the tanks came across but mined his own dead in his retreat. Bulldozers buried the dead in their emplacements and foxholes.

We Couldn't Do It, But Did

As the campaign progressed engineers unloaded ships, set up and maintained beach and dump defenses, examined all enemy dead and materiel for mines, and provided security for Target Hill. Details of engineers went out daily as stretcher bearers . . . daily routine for the Pioneers.

In the advance to pass and envelope Hill 660 tanks were needed once more. The "road" open to the tanks consisted of a shattered and debris-hidden trail, two rivers, and that swamp. Engineers took the lead in a queer advance that saw a bulldozer pointing the attacks. After the bulldozer came tanks, flanked by more engineers, then half-tracks and additional engineers and infantrymen.

This strange advance continued for almost 1800 yards, up to and past Hill 660. Snipers remained at their posts but the arrival of the tanks forced the enemy to retire. They just coudn't see facing those authoritative 75-mm guns carried by both tanks and half-tracks.

Hill 660 was still occupied by the enemy. Heavy fire from the steep slopes cut the beach road after the engineers, tanks, and infantry, totaling 200 men, had passed. The Marines were cut off. Ahead was the bulk of the Japanese defenders. On the left was the ocean, on the right the swamp, then Hill 660. Behind, were 300 yards of bog and shattered trees where Japanese fire prevented immediate continuance of the operation.

Scouts were sent out—engineers. Security lines were set up—engineers held down a sector. Barbed

wire was needed—engineers crossed that cut-off area and returned to the landing beach dumps for wire. They brought it back in a truck, again crossing the bullet swept area. This was possible only when tanks and machineguns turned such a withering fire on the hillside that the Japs were forced momentarily to take cover.

Marines attacked from the other side of Hill 660, forcing the Japs into the swamp behind the American line. That night the trapped Japs tried to run the gantlet along the beaches in an effort to rejoin their own forces. Their attempt was made through the engineers' sector. Nineteen Japs, including a captain and two lieutenants, were killed.

The enemy flees, abandoning his bases and supplies. He moves out his wounded, leaving materiel and records behind. Marines forge ahead in all directions like the spokes of a wheel as engineers clear the road for them. The Japs never planned on flight from their "secure" positions—they brought in more than they could carry out. Roadblocks left by the Japs to impede the Marines advance are knocked out by engineers. The enemy is hard pressed; several columns are hit and annihilated. The Japanese flee empty handed. The campaign continues and the enemy flees even without rearguard action. It's a case of get out or die and the Japs do not seem over anxious to join their ancestors. Marine engineering has worked. The things the Japs couldn't see have been done.

Member of Marine gun crew struggles with piece on typical Cape Gloucester "road."

Machineguns in the Jungle

In the jungle it is often found better to assign sectors to single machineguns which traverse on a given elevation than it is to fire the guns by sections or platoons laid on fixed lines. Guns fired on fixed lines conceivably might fire together continuously into an impenetrable thicket, perhaps only a few yards in front of the position. Such a situation could be avoided by reconnaissance before siting the guns. But because of the short jungle ranges and because fire preparations are often fired on targets no more distant than fifty yards, the farthest advance and the limit of observation of those who plan the fire may be limited to the line from which the guns are fired.

Except in hilly country machineguns are seldom used for distant support or for delivering overhead and indirect fires. However, machinegunners must be well trained in indirect fire to be able to put out a coordinated direct support fire. Under jungle conditions there is often a complete absence of landmarks and aiming points in the curtain of vegetation that hangs in front of the battle position. And so the compass, clinometer and plane table are the only means of discovering whether or not the guns are pointing in the right direction and at a good elevation.

As a rule it is best to place direct support machineguns squarely up in the front lines. Because of the jungle, break-through guns, as such, cannot be sited to cover intervals between front-line guns, but can be placed to cover command posts, supply routes, and approaches. Big banyans and other massive trees are used to break the line of fire when it happens to point into our own positions. Officers, noncommissioned officers, and gunners must use judgment and have a well-developed tactical sense in jungle fighting.

There has been a lot of discussion over the relative merits of the light and the heavy machineguns for jungle fighting. The fact is that the light gun will only do what it is designed to do, and only the heavy can do the job heavy guns were designed to do; but the heavy can do everything the light can do. The argument that the heavy guns cannot keep up is invalid. Too often heavy guns have crowded the heels of riflemen, even on two-weeks treks through swamps, for the objection to be sound. It all depends on the endurance and stubborness of the men who carry them.—By Lt. Col. George O. Van Orden, *Infantry Journal,* August, 1944. Condensed.

Sleepless Foe

The human enemy sometimes rests—not so with disease. The medical corps must wage a constant war on germs, which strike men down even more relentlessly than Jap bullets. Training in hygiene pays.

By Lt. Comdr. Robert W. Skinner, III

THROUGH the early morning darkness to starboard the silent, black shadow that was Savo Island moved slowly out of sight astern. The little transport was quiet. As she slipped through the water, she almost seemed to hold her breath. The men moved quietly about their work and there was little talk. Everyone seemed to be thinking a lot, and a feeling of tense confidence covered the ship as we stood in toward Tulagi. The assault was carried out as planned, and resistance, though stubborn, was poorly organized, probably due to the element of surprise.

Our C. O., "Red Mike," was tops. The respect and admiration for such a leader which is felt by all hands from the lowest buck private up contributes greatly to the fighting efficiency of any unit. Men follow their leaders in measures of hygiene and sanitation as well as in combat, and when they are in trouble they look to their officers, and especially to their corpsmen for help. To deserve this trust, the corpsmen, like the officer, must be well trained. They are not born—they are made, and much hard work goes into their making.

Our equipment, though light, was excellent, and our men were well trained and in the peak of condition. The men, and especially the corpsmen, had been schooled for months in first aid, hygiene, and field sanitation, and our skipper insisted on complete and forceful action on any recommendations the medical officers made for the health of the men. "His men," one of them said, "were his tools, and like any good artisan, he took good care of them."

The excellent physical condition of the unit was the result of long and strenuous training and the gradual weeding out during the training period of men found to be unfit for service.

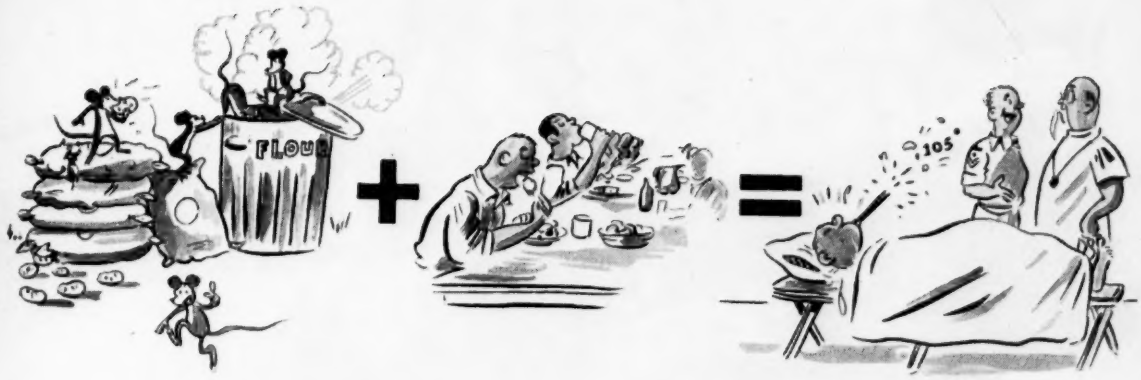
When in the tropics, many men do not realize the dangers involved in failing to carry out the normal habits of sanitation, but most men are intelligent and if we take the time to explain to them the "why" of things—and then repeat it time after time, and, if necessary, take a few up to the "Old Man"—the idea soon takes hold.

Close cooperation between the medical officer and the C. O., and a thorough understanding of the tactical situation on the part of the medical officer are essential. When our little force moved into Tulagi, we, as medical officers, had complete information of what was anticipated.

Our equipment and medical supplies had been selected accordingly, and our plans for evacuation were well formulated and worked smoothly. The training the men and corpsmen had received paid dividends in lives. It has been reported that all of the casualties evacuated from our Battalion while on Tulagi recovered. The skill of the corpsmen and the excellent physical condition of the

Disease Is Everywhere!

Inspection!



men at the time of their injury were the major factors which made such results possible. Many of our minor casualties never left the island and were returned to duty in a matter of days.

The health of these men during three months of training in the tropics prior to the assault was maintained by proper hygiene, and sanitary measures. Daily inspection of galleys, heads, water, and waste disposal facilities must be rigidly adhered to, and forceful action taken where delinquencies are found. Instruction in hygiene and sanitation must be given continuously, not only to the corpsmen but the line personnel as well. For the good of the unit as a whole, offenses against orders relating to hygiene and sanitation must be dealt with quickly and forcefully. Failure to do so may result in an entire unit becoming non-effective due to disease.

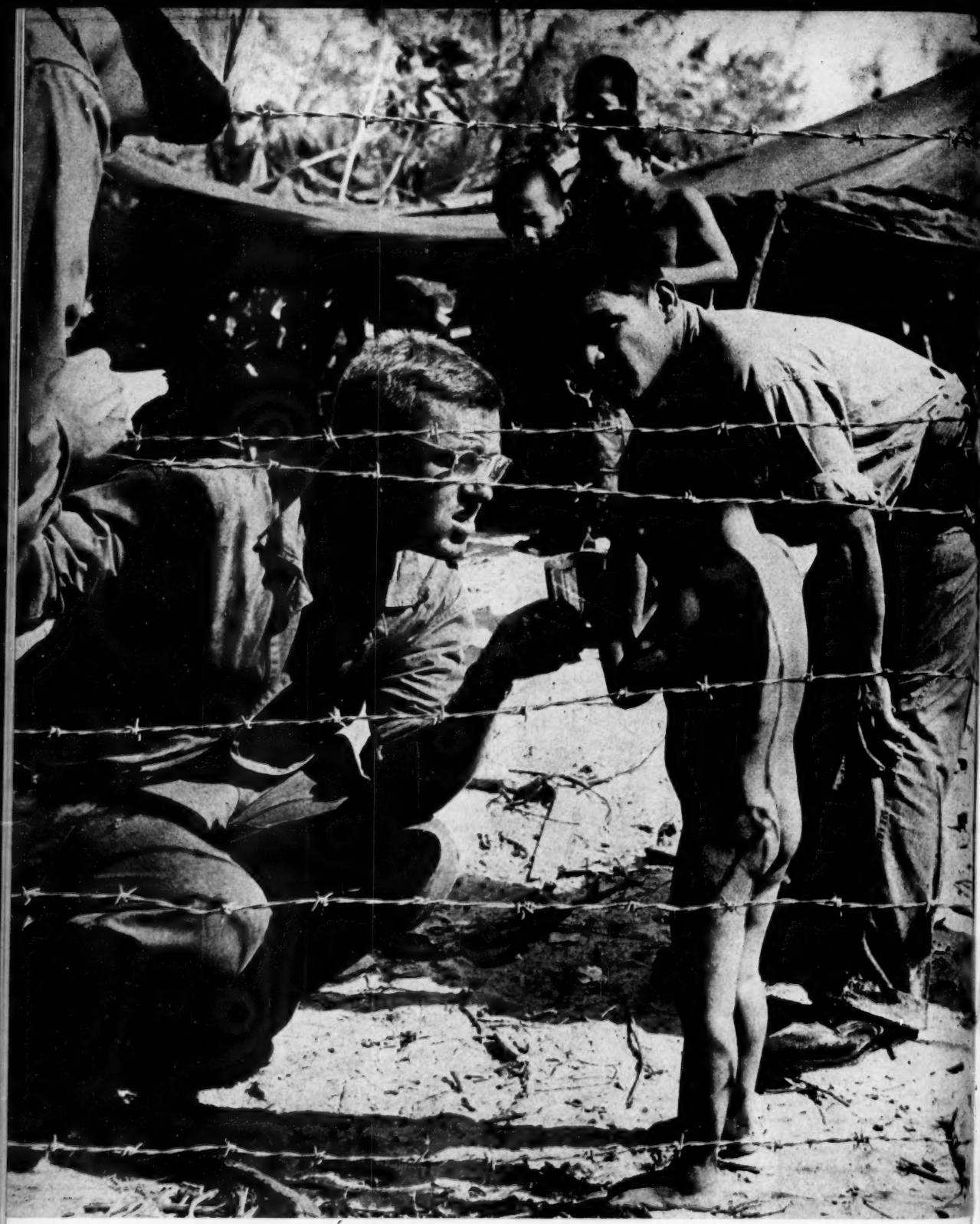
Many of the diseases which we encounter in the tropics are water-borne; dysentery, worm infestations, cholera, typhoid fever, and amoebiasis, to name a few. Men must be taught that all water, regardless of how clean it appears to be, is a potent source of disease and death, until it has been properly treated. It is the duty of the unit commander to see that his men have a safe and potable water supply. If he fails to do so he can expect losses in his command due to disease. They may be sufficient in number to render his unit incapable of combat. The water must not only be safe, but good to drink.

The tropics are full of many types of fungi capable of producing disease in man. There are also highly virulent bacteria which cause infection in the slightest scratch. It is therefore obvious that personal cleanliness is an essential of health in the jungle.

The health of troops serving in the jungle is primarily a matter of forceful application of cleanliness of person and habits, adequate prophylaxis, and the use of common sense. The duty for enforcement of these principles lies with the commanding officer, and his actions should be based on competent advice from his surgeon.

"What, No Scivvie Drawers?"

"Those Damned Mosquitoes!"



U. S. Marine in New Role

American fighting men for the first time on Saipan met the problem of dealing with Japanese civilians. This Marine is trying, without notable success, to comfort a weeping child while one Marine makes suggestions and another takes notes.

Flying Jeeps

The rapid advance of U. S. ground troops on Saipan was brought about in a large part by the tiny Stinson "grasshoppers" which acted as flying eyes for the artillery; these two-place planes do a variety of jobs. *By Sgt. Charles R. Vandegrift**

"Flying jeeps," used for the first time by the U. S. Marine Corps during the invasion of Saipan, played a major role in the rapid advance of American troops, and our ultimate victory there. The "flying jeeps" are Stinson Sentinel planes, and belong to what are known as VMO squadrons. There is one such squadron with each division. Although the Army has been using Piper Cubs for the same type work done by the Sentinels ever since the African campaign, the "jeeps" were not introduced into Marine Corps offensives until the action at Saipan.

VMO is officially known as "heavier-than-air Marine observation." On the field, the squadron is referred to as the "elevated artillery observation post." The "flying jeeps" do a variety of jobs. They serve the infantry and artillery, and make numerous photographic and operational hops.

Operate From Jap Field

At Saipan, they went into action on the third day after the landing. One squadron, organized December 20, 1943, went into action with the Fourth Marine Division. So well did it function that the Second Marine Division began putting its "grasshoppers" into the air. And when the 27th Army Division came in to bolster the Marines attack, it soon had a similar squadron on duty.

The first operational flight was made at 6 o'clock in the morning of the third day of the invasion. While the observers were attempting to relay information regarding the enemy to the artillery on the ground, the Japs sent shell after shell into the air in an effort to knock the tiny plane out of the air. The artillery officer who was receiving the messages from the plane over a two-way radio telephone, kept his eye on the maneuvers of the "grasshopper" as it dived and climbed, slid and banked to avoid the enemy shellfire. Finally, he could stand it no longer.

"For God's sake," he shouted, "open up on them with your machinegun."

"Yeh," drawled the observer, "and just where are we going to get it." The officer on the ground had forgotten that the only weapons carried by the VMO men were .45 caliber automatics.

When the entire squadron went to work, it operated as a unit off an auxiliary Jap strip north of Charon-Kanoa. Shellcraters in the field caused two minor crackups the first day. Two other planes were damaged when a nearby Jap ammunitions dump exploded, and a pilot and observer were killed when their riddled plane crashed.

Biggest manpower loss to the squadron during the Saipan action was from a stick of Jap antipersonnel "daisy cutters," after the observation unit moved to Aslito airfield. Those killed were the assistant engineer, a master technical sergeant; the parachute rigger, a corporal; and the squadron's carpenter, a private first class. A squadron leader was wounded, as were a lieutenant and a technical sergeant. Seven others received shrapnel nicks.

Although generally the automatics carried by the pilots and observers of the "flying jeeps" are the only weapons aboard, there have been times when the observers have carried carbines or Thompson submachine guns, spraying enemy infantrymen as the planes drop low. The planes are very maneuverable and can operate from a field not much bigger than a baseball diamond.

The squadron which had the honor of being the first of its type to function for the Marine Corps was activated at Quantico. Each squadron includes besides pilots and observers, plane captains, men qualified through training and experience to repair and service the small craft, and two parachute riggers, a carpenter and a fabric man. Before leav-

* Marine Corps Combat Correspondent.

The tiny, two-place "Flying Jeep," used as artillery spotter, shown over Saipan.

Ground crew refuels a "Flying Jeep" for a mission on Saipan. Gas is pumped from fifty-three gallon drums, stacked in the background, by a one cylinder field unit.

ing for the South Pacific, the planes were flown from Quantico to San Diego, Cal., making stops at Roanoke, Va.; Knoxville, Tenn.; Little Rock, Ark.; Fort Worth and El Paso, Texas., and Tucson and Yuma, Ariz. The plans were dismantled for shipment at San Diego.

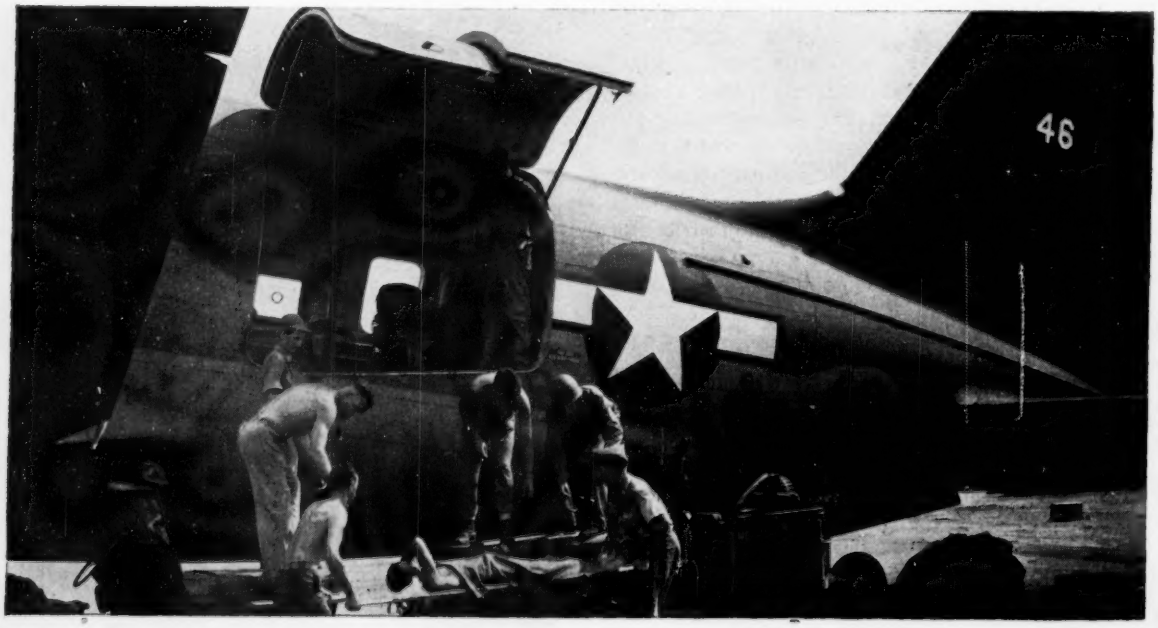
The Curtiss Commando

The big Curtiss-Commando sped through the skies toward Tarawa. Back in the cargo compartment, stowed and lashed with care was enough weight of explosive—fuses for bombs —to blow the transport to matchwood.

It was January, 1944, and the Commando, manned by a crew of U. S. Marines from one of the oldest utility squadrons in the Marine Corps, was blazing a new landplane route from Johnston island to Tarawa.

When the transport dropped down on the coral landing strip on shell and bomb torn Betio, the Marine crew had chalked up another "first," one of the many records established by the squadron after it received its quota of R5C's in September, 1943.

Among the squadrons' "firsts" is the transfer of a Marine squadron and its equipment, 396,000 pounds of cargo over a distance of 711 nautical miles in two days using six planes.



Fire Control Training

Three types of graduates come from the school at Quantico—the enlisted technician, the chief ordnanceman, and officers assigned for further training in technical details at the school. *By Sgt. Henry A. Conner*

BEHIND the spectacular anti-aircraft front lifted so effectively against Japanese planes in the Pacific war stands the unsung job of the fire control system maintenance men. Behind them, in turn, is the still lesser-known endeavor to put into the field Marines capable of keeping superhuman mechanisms working under any conditions.

Diagnosticians for the optical height finders or multiple-wired data computers do not grow on trees of experience alone. It takes 25 weeks of precision training to develop previously experienced anti-aircraft (AA) ordnance men into technicians for any one of the five phases of fire control upkeep.

When the defense battalion was conceived in 1939 Marines had little equipment for ordnance repair training. A very few selected men were sent to the Army Coast Artillery school at Fort Monroe or the Sperry Gyroscope Company in Brooklyn to get instruction on maintenance of the AA ground defense guns the Corps was beginning to use so much. When this method became inadequate for the increasing needs of AA batteries, the Ordnance School and Repair Depot was established at Quantico, Va. in April, 1942, as a center of training for artillery mechanics, munitions technicians and fire control repairmen.

Lofty ceilings and extreme speeds of the modern war plane made fire control machinery much more complicated for AA marksmanship than that for ordinary artillery. Battle experience soon made it apparent that a core of highly-trained experts should be organized to keep every group of AA batteries constantly in operation.

New Organization Approved

In the early days of war in the South Pacific disposition of maintenance men was not on an organizational basis. This had been the case on Samoa when officers of the AA group decided to gather into a single "cell" all the men they could find among their gun crews who knew something about maintenance as well as operation. The cell was attached to group headquarters and kept ready to shoot trouble at any spot in the group. A private who was discovered to have worked in an arsenal was promptly relieved of his mess duties and put to invaluable work on fire control equipment.

Last April, just two years after the Ordnance School was founded, new Tables of Organization were approved, providing for ordnance personnel to be attached to corps ordnance companies, to be in turn sent out to AA battalions in cells. Enlisted technicians being graduated now at Quantico are qualified in fourth echelon maintenance, which means they can do everything but manufacture heavy parts in the field.

Thorough Training Course

The Fire Control Section produces three types of graduate—the enlisted technician, the chief ordnanceman, and officers assigned to the school for training. The enlisted technician is the complete expert in a limited field. He is exhaustively trained in either searchlight operation, remote control systems, maintenance of the heavy AA director, the light AA director, or a new type of electronic director not yet in service with the Marine Corps. The chief ordnanceman, a staff NCO, receives a more general training but covers broader ground. He specializes in the maintenance of either light or heavy directors and all attendant equipment. The officer-trainee comes into the Fire Control Section during the course of over-all instruction in every section of the Ordnance School.

Originally Fire Control accepted men with likely backgrounds and abilities, whether they were from boot camp or elsewhere in the Corps. Classes were then of a few weeks' duration. The acquisition, finally, of sufficient equipment, and the realization that more thorough training was needed, resulted in the extension of courses for all types of trainee to half a year. Today only Marines who have received overseas experience are admitted. There is no quantitative shortage of technical men. Because of the inadequate time and facilities available when they receive earlier training they are being returned to school for refresher instruction.

The Fire Control curriculum is exacting. It was found that students who could pass written examinations were sometimes unable to strip down or assemble equipment they had been studying. Consequently, under a new grading system tests count just 20 per cent of the classroom record. General attitude amounts to 20 per cent, notebooks to ten per cent, and mechanical ability, demonstrated through shop work performed under the eye of an instructor, to 50 per cent. Notebooks are taken into the field for reference work. They are compiled from a carefully se-

lected series of lectures that emphasize the information the Section has found the maintenance men need most.

Each week technicians in training are given both written and practical examinations, and before graduation engage in a week of field problems. Failure in two weekly tests usually results in expulsion from the course. Every graduate who entered as a private or private, first class, is automatically promoted one grade. Those who come in as corporals or above among the noncommissioned officers are recommended for promotion.

Visual aids are extensively used by the instructors. They include charts, display panels, tool boards and cut-away sections of machinery, as well as complete sets of equipment to be used in operational and trouble-shooting problems in the classroom.

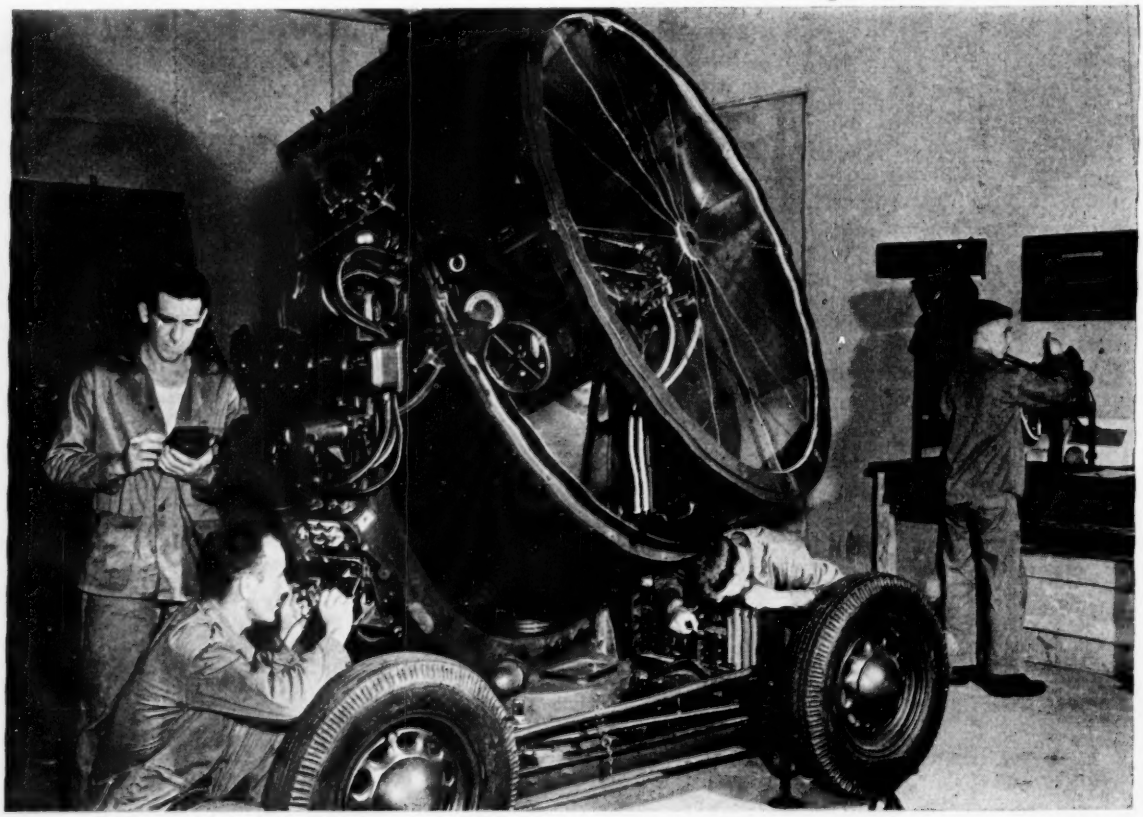
Before they do anything else all enlisted trainees receive a preparatory course of four weeks basic electricity, and four weeks in the use of hand tools and blueprint reading. Electrical sets, motors, generators and other equipment are available in sufficient quantities to enable students to do individual and practical work in the laboratory. Then they go on to instruction in the equipment for which they are best qualified.

In the firing of both the 90- and 40-mm AA guns the directors, which compute data, aim and fire the guns, are located at some distance from them. One of the five separate courses of study for the technicians is that dealing with the electromechanically controlled hydraulic systems by which the director units position the guns. This is remote control. When they finish their studies remote control system technicians will know all there is to know about upkeep and repair of these mechanisms for both the 90's and 40's.

Need Good Background

There are two types of director, the M-7 used to operate the heavies, and the less complex M-5 for the 40-mm guns. The M-7 has a host of factors to deal with in putting flak on a pinpoint target moving at great heights. It must take into consideration its position in relation to that of the gun, the constant change in muzzle velocity due to wear, the force and direction of the wind, the loading speed of the gun crews, and the density of the air at the time of firing.

One director and height-finder serves an entire battery of heavies. Marines assigned to the heavy AA technician course must have an excellent background in mechanics and electricity.



Marine trainees in fire control study 812 million candlepower antiaircraft light, in "classroom" at Quantico. The light is capable of throwing a 30,000 foot beam.

They must also be able to service a height-finder completely, and for this are taught elementary optics and their uses.

Each 40 has its own director, a device with a prediction mechanism that responds instantaneously to the tracker in directing the gun. The 40 must aim and fire with machine gun speed and facility because planes coming within its lesser range get through the field of fire much more quickly than they do at higher altitudes.

At present a few Marines with the required backgrounds are studying the new M-9 heavy director, now being used by the Army. They are being trained against the day the Marine Corps adopts some model of the electronic-type director. For students of this course an extra four weeks of electrical training is provided and that for tools and blueprint reading eliminated.

Repair A Main Point

Selected technicians are trained to repair the big 60-inch searchlight, whose 800 million candle power beam searches the night skies for enemy planes, illuminating the target for friendly fighters and AA gunfire alike. The complicated automatic feed mechanism, functioning to keep the high intensity carbon arc burning continuously at the focal point of the 60 inch parabolic mirorr, the remote control system, enabling positive, smooth control of the light from a remote location, the power plant; all these require a skilled technician's constant attention to operate at tip-top efficiency.

Courses for the chief ordnancemen are known as Fire Control One and Fire Control Two. The first deals with the M-5 director, its remote control system, the AA searchlight. Fire Control Two covers the M-7 director, its remote control system, the heightfinder and the M-9 director. Work on the M-9 for this class of student, however, is merely for familiarization purposes. A three-day field problem concludes the work. When graduated, the NCO's are thoroughly enough versed in the whole picture for either light or heavy guns and ready to supervise the work of enlisted technicians.

Of the 25 weeks they spend in learning, ordnance officers spend eight weeks in the Fire Control Section, covering all phases of AA fire control equipment. This is sufficient to give them a comprehensive knowledge on the functions, necessary adjustments and inspection requirements of the units under their command. Check-off lists, which officers are required to fill out, enable them to ascertain quickly and accurately the condition of any part of the equipment. A three-day field practice operation precedes graduation.

While the primary mission of the Fire Control Section is training men, it has as a secondary duty the repair of equipment sent in from the field. This is done by the staff of 24 instructors.

"Waste Not, Want Not"

SOMEWHERE IN THE PACIFIC (Delayed)—"Waste not, want not" seems to be the policy of many Marines at this outpost where scrap materials are used for many things.

Tin cans serve as ashtrays and as reflectors for lights. Small pieces of steel are used to make rings and, if of high quality, are fashioned into knives.

The decontamination truck, with a normal purpose of neutralizing gas that may adhere to buildings or machinery, substitutes as a water spray for the plants that have been carefully cultivated on this island, formerly barren.

Torn and rotted sacks and old rags are utilized to good advantage by burying them in the sand under young plants or grasses. Such material effectively binds loose sand and increases the moisture-holding capacity of the soil.

Any condemned mess hall supplies, such as beans, are sown broadcast on exposed areas with a considerable per cent of the seed germinating and growing. Even though these plants never reach maturity, they return organic matter to the soil and serve at least for a short time to bind the sand.

One Leatherneck built himself a small shack from waste materials but authorities have not as yet granted his request for permission to live in it.—Sgt. John F. Reilly.

WHAT'S NEW

Review of the Latest Developments in Military Equipment

New Protection for Fliers

Flak shawls, blankets, and curtains are being perfected by the Army Airforce Materiel Command as additional protection for fighter and bomber crews. Several experimental stations are engaged in the work following studies showing important reduction in incidence of serious injury among combat aviation crews using the standard flak suit, now in its fourth revision. Fliers themselves have suggested most of the innovations, particularly the shawl idea, a sort of horsecollar, and special tail pieces. These additions are designed to provide additional protection to crews and at the same time to lessen restrictions on movement imposed by bulky armor.

Cargo Kits Perfected

Three new types of cargo tie-down kits (R-1, R-2, and R-3) have been adopted for use in cargo planes to permit efficient handling of heavy equipment. Air Transport Command has been using the new kits successfully for some time, particularly with light trucks, machines, and power plants, which are normally difficult to secure aboard a transport plane. Rope hooks to supplant tedious knot tying are part of the equipment, as are special tighteners to take up slack.

Army Has New Raft

A new liferaft for Army airmen weighs only 18 pounds, including sail and spray shield, and is attached to the life vest. The spray shield can be attached to the top of the raft to protect against waves and rains or can be strapped around the occupant when he is sitting up. The C-2 raft is to be issued to bomber crews, one for each member. Its sail is yellow on one side to attract attention, blue on the other, for camouflage. The mast is made of aluminum, and can be telescoped.

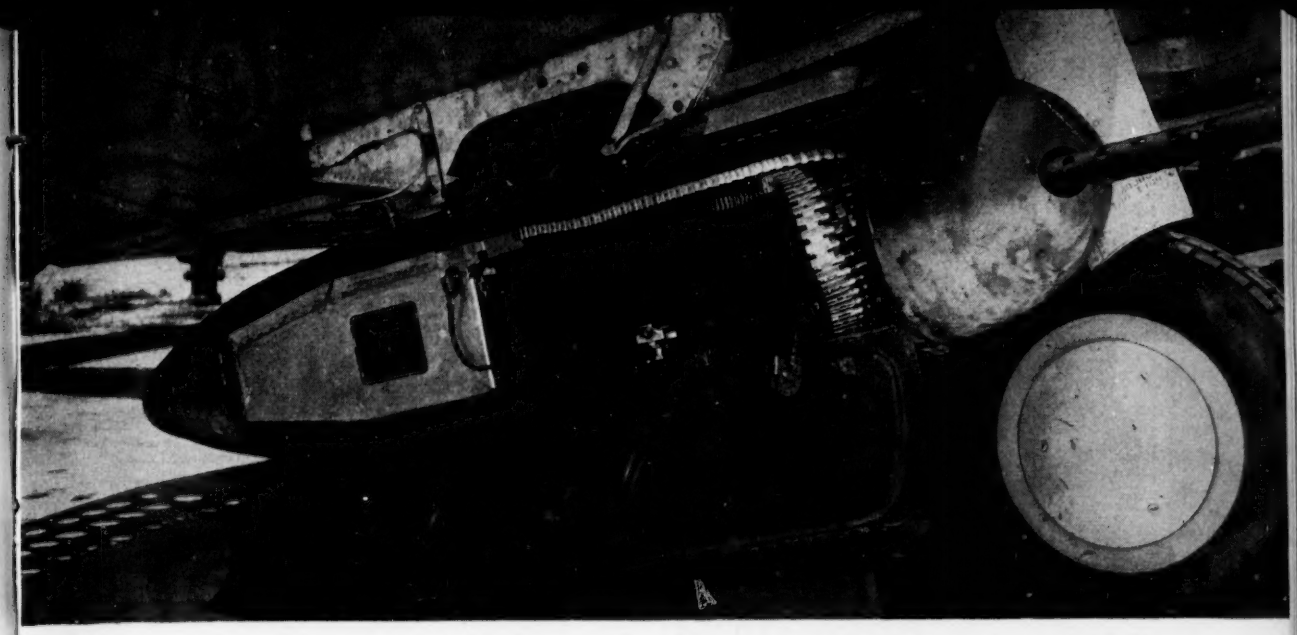
Rain Repeller Mixture

Industry has turned out a new mixture which when applied to glass surfaces sheds water and protects vision. It has been developed for use on flat or cylindrical surfaces not equipped with windshield wipers. Twenty bottles contain enough repeller for 10 applications on a windshield; each application will last out a heavy rainstorm.

Navy's New Ear-Protector

An "ear warden," new ear protecting device, has been officially adopted by the Navy as a guard against severe concussion of gun blasts and high noise levels of Diesel and airplane engines. Limited shipment is underway, with maximum output expected in some fifteen weeks. The warden is made of a special compound of neoprene, is nipple-shaped, and is housed in a plastic container which also serves as an applicator, making it easy to slip the protector into the ear channel. A safety tab on the device lies flat against the ear lobe to facilitate easy removal. No serious hearing difficulty has been found by men wearing the warden.

Yanks inspect one man submarine which landed on Peter Beach, in the Anzio area. The tube on the left is the torpedo. The other, the driving compartment, houses one man.



Among the new and deadly tools of war developed by the Navy is this "gun package"—a self contained machinegun unit—attached as are detachable gas tanks.

All D-Day Vehicles Could Swim

Every Allied vehicle used in the Normandy beach landings was equipped to travel through water under its own power and reach the beaches ready to fight. This conversion task was undertaken when combined military leaders feared they might have to get tanks, armored cars, and other mobile units ashore without the use of ports or ramps from landing vessels. Britain's entire sheet steel rolling capacity was occupied three full months on the job. No single factory completed a wading kit; they didn't even know what they were making. Some 250 trucks handled assembly deliveries for eight weeks, and so little time remained that crews went ashore with handbooks open, studying the wading system as they went. Wading kits for tanks were designed for six feet of water, and included air shafts for crews.

Navy Personnel Going Up

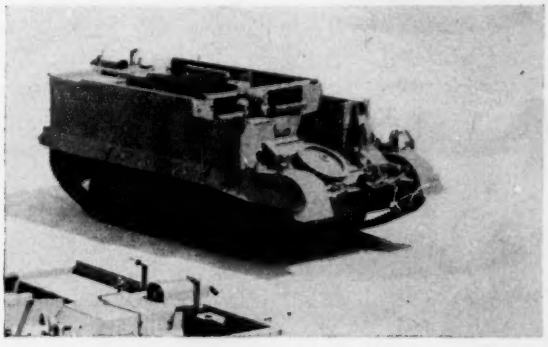
Accelerated pace of the war in the Pacific has forced the Navy to increase personnel to 3,200,000 by the end of the year and to plan on strength of 3,389,000 officers and men by June 30, 1945. Previously authorized Navy strength was 3,006,000 and this has been reached. President Roosevelt has approved 194,000 additional enlisted men during the next four months and the enrollment of 189,000 more in the first half of next year.

Navy Plane Sensations

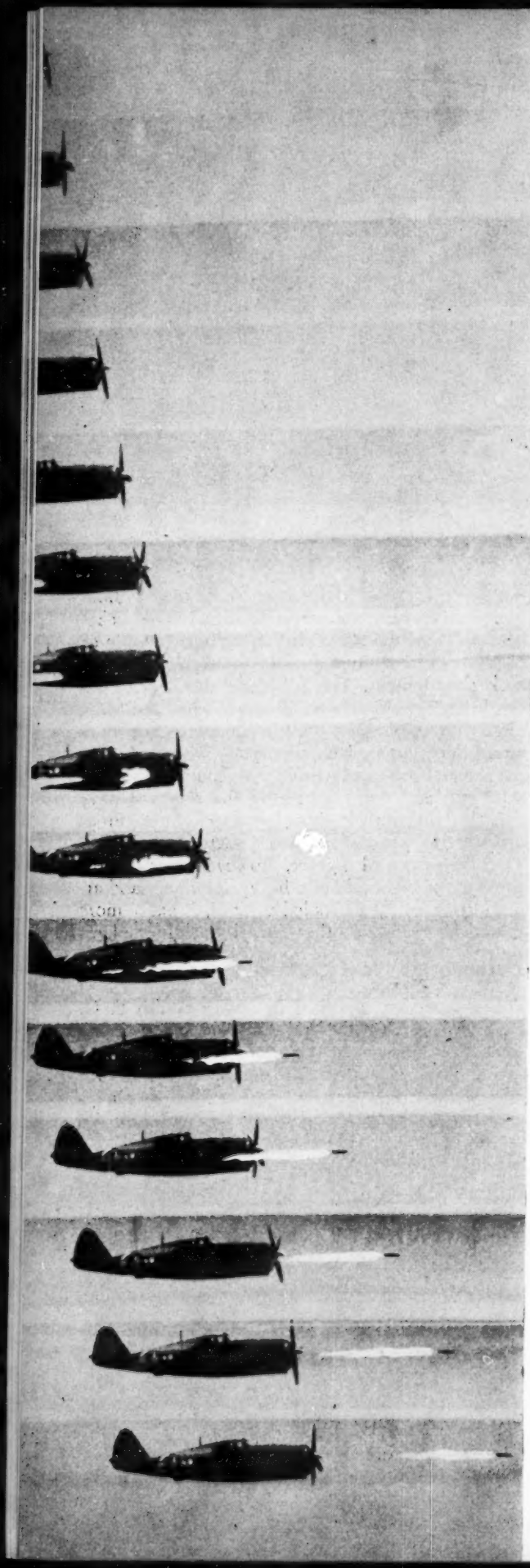
Brief mention is now allowed of a few of the Navy's really astonishing new planes and other equipment. These include: A new twin engine fighter plane of unprecedented firepower which climbs almost vertically; the Navy jet-propulsion plane (called "Swish" for its extreme speed and lack of noise); battleships with 100 times the firepower of those only three years old; 27,000-ton battle cruisers, more heavily armed than pocket battleships of the Axis; aircraft carriers capable of handling twin-engined medium bombers; improved rocket equipment. The jet plane was viewed recently by reporters who observed that the ship, closely resembling the P-40 in silhouette, but more streamlined, amazed Naval officers with its speed, maneuverability and climb. She took off after a short run and outmaneuvering the standard navy fighters flying with it, shot almost straight up. From fifty feet to out-of-sight was a matter of seconds. The twin-engined fighter, however, was almost equal to the Swish, despite heavy armament and armor. Powered by air-cooled engines, it packs more fire-power than any other American fighter plane.

Conestogas Now Out

The navy has cancelled its contract with E. G. Budd Manufacturing Company for 175 stainless steel Conestoga cargo planes. The much publicized plane cost too much, and was slow in production, and the Navy will use the cheaper Douglass transports. Army cancelled its 600-plane order



New light armored machines designed to carry machinegun and mortar crews to front.



for Conestogas by Budd some weeks ago. Need for the big plane has decreased since the contracts were let, and the Army has made available the Douglass planes for Navy transport, eliminating need for the slow-building steel planes.

Web Slings for Rifles

New Army issue rifles are equipped with web slings, replacing the long-used leather sling.

Plasma-Fractionation Method

Five-year-old Navy program for plasma-fractionation has saved thousands of lives, and now is in this status: contracts have been let for manufacture of blood-grouping globulins, essential to blood-typing, and the product is now a standard supply item; adequate quantities of concentrated serum albumen, shock resistant, are at hand throughout the service; increasing amounts of fibrinogen and thrombin are available for their speciality, brain surgery; Gamma globulins are being used to prevent measles, one of the most troublesome diseases.

New Jungle Match

The War Production Board has permitted development of a new waterproof match for use in the jungle areas and in sea duty. Some of these new matches have proved good after forty hour immersions in water. They are still being tested in the field, but may be in production shortly. The waterproof matches look like ordinary matches, differing only in the chemicals used.

Henderson Becomes Hospital

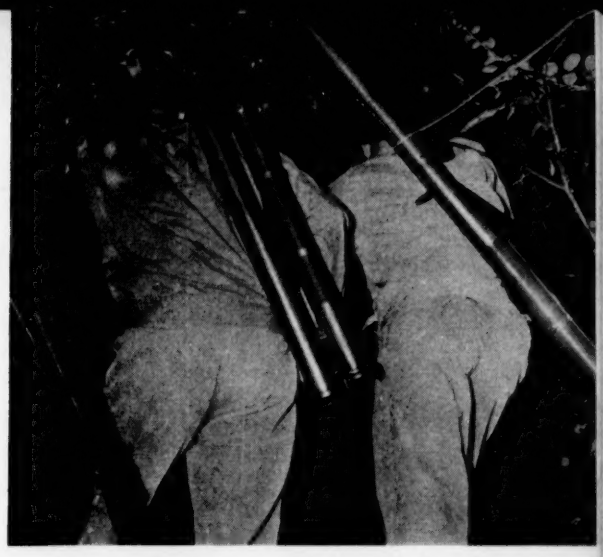
The old *Henderson,* traditional, Marine, China duty transport, has been transformed into a 500-bed floating hospital, renamed the *Bountiful.* She now has three general operating rooms, special eye, ear, nose and throat laboratories, eight dressing rooms and eleven wards. She also has a mobile field hospital with seventy-two cots.

Postwar Scientific "Command"

A twelve-man committee of Navy, Army, and scientific experts is at work on creation of a so-called scientific high command ranking with the command staffs of the military for operation in postwar times. Formation of this new group is considered by many as one of the most important proposals for postwar security. A main objective is to make the organization easily responsive to new ideas in warfare. Current meetings consider whether the organization should have its own research projects, what relationship should be

← Speed camera catches rocket being fired by the new Republic P-47 Thunderbolt.

Mr. Churchill inspects a "Cromwell," British cruiser tank, making Normandy front debut.



Latest version of the bazooka, a folding model, makes weapon useable in all places.

maintained with Army and Navy, and how the scientific committee should be financed. Dr. Vannevar Bush is a leading backer; he has worked with his Office of Scientific Research and Development to produce some of the major allied secret weapons now coming into broad use on all fronts.

Japs Now Have Sealing Tank

The Japanese have finally developed a workable self-sealing gasoline tank for their aircraft. The sealing cover consists of several layers of rubber with a total thickness of 1⅛ inches, and tests by AAF engineers on tanks found in captured planes show the tank will fully reseal after being punctured by one-inch wide holes.

Nazi Jet Propulsion

The Germans, like most nations, had jet planes in experimental stages at war's beginning. Now the Nazis have several well along and at least one is a rocket plane. Small, buglike in appearance, this affair has a deep, tear-drop fuselage. It is liquid-rocket fueled, using liquid oxygen and some other liquid fuel. It has only a 10-minute flight duration, no wheels, takes off from a track, and is said to have good climb and extremely high speed.

Aerial Camera Stabilizers

Topographic mapping is being simplified by an automatic stabilizing unit for Army reconnaissance planes which offsets tilt and pitch of the plane when the camera is being used.

Fuel Servicing Trailer

A new 220-gallon fuel servicing trailer which can be towed in tandem trains, and can be easily carried in a C-47, has been standardized for use by the Army. The three-wheeled unit can be towed by a jeep at 20 miles an hour over rough terrain. Nozzle capacity of 30 gallons a minute is provided.

Aerial Delivery Box

Army also has developed a specially built wooden box that can be dropped from 1500 feet without a parachute. Breakable items, such as bottled medicine, can be dropped in the box with average recovery of 70 to 100 percent. Pyramided ends help absorb the ground shock.

High Flying Aid

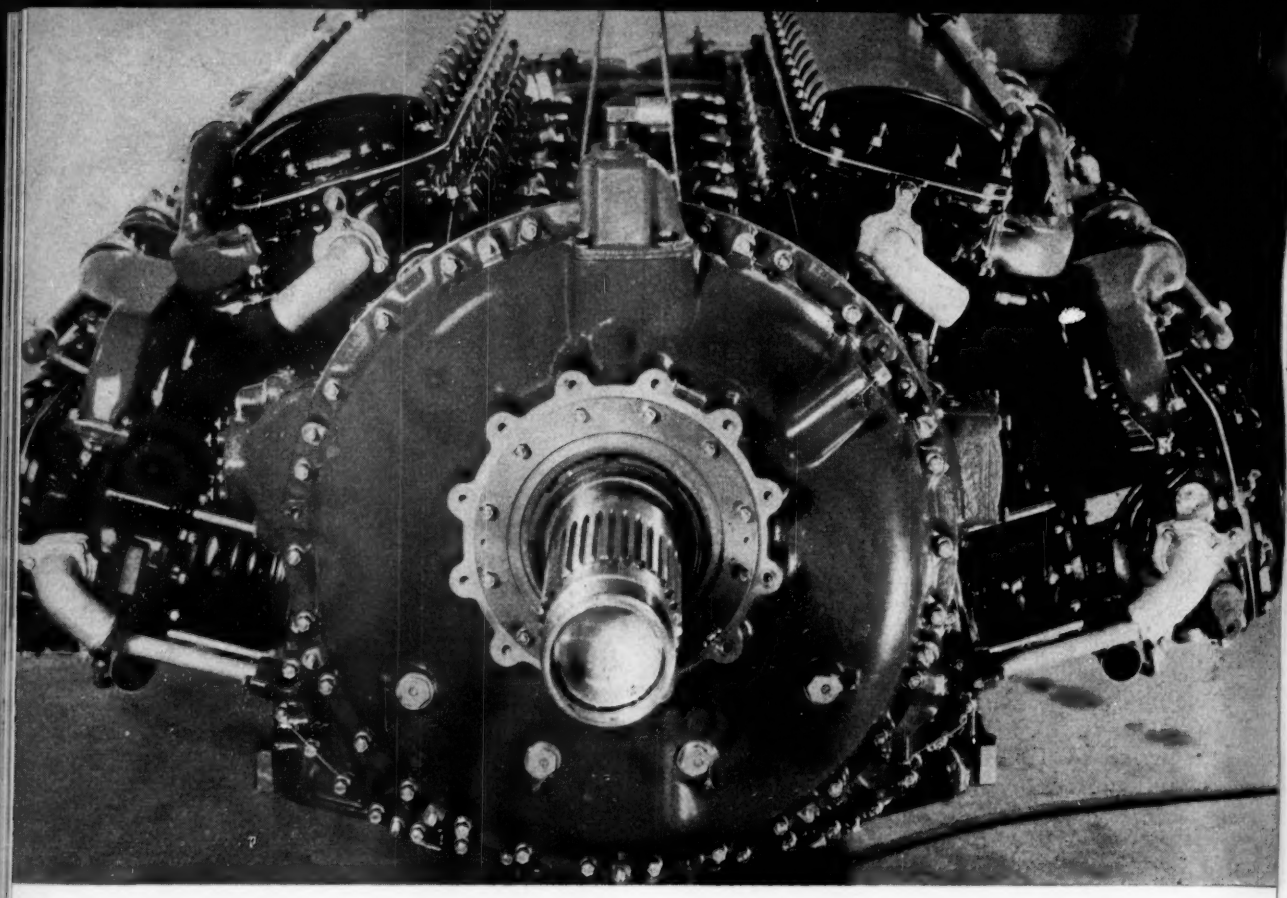
New patent issued to Reynolds J. Nitsch of Rochester, N. Y., covers a lens mount aimed at eliminating ice formations on high altitude cameras. A filter holder equipped with a small heater adapted to fit with the filter over the lens barrel would prevent shutter and diaphragm from freezing, would act as a de-icer for the lens itself.

Plane Identification

Navy Lt. Alston Rodgers, former General Electric engineer, has invented a new projector which flashes film-images of planes and ships, friendly or enemy, on a screen, thus enabling much faster craft identification. The images are viewed from various angles for a split second to train pilots in making quick decisions in combat. The projector can present 1600 frames of 35-mm film on a 100-foot spool little larger than a pack of cigarets.

Claim Exploding Balloon

Swedish observers, not always completely reliable or impartial, are reporting an exploding barrage balloon, claiming it is being used by "foreign" forces, whether German or Allied being unstated. They claim that a balloon holding an explosive charge and a drum filled with inflammable liquid descended on Swedish soil recently. German sources reported Allied use of a new type grenade, called a parachute flare bomb, sup-



The world's most powerful aircraft engine, this liquid cooled Allison motor is pronounced ready to go into service with the U. S. Army Air Forces against the Axis.

posedly fired by a grenade discharger, which may be related to the ordnance reported in Sweden.

More Sandwiched Plastic

Sandwiched filters, similar to the better type of sun glasses, are being incorporated in bombsights, periscopes, goggles, and gunsights. The filter consists of dyed plastic sheet between clear glass.

New Cooling Fan

A multi-bladed cooling fan which sucks air into the engine from around the propellor hub may be adopted soon for some Army planes. By moving more air through the engine cowling, the fan is expected to improve engine performance. Wright Aeronautical Corporation developed the fan, and it is being tested by Army flight engineers.

B-25 Bomb Releases

Bomb release controls on the newer B-25's are duplicated in the pilot's compartment. He can release the bombs if the bombardier is disabled. Bomb bay door releases have been shifted from the navigator to the pilot in the new plane. Number of cockpit controls has been reduced by interconnecting several. Throttle, propellor adjusters, and mixture controls have been combined into a single unit. Speed-boost control is gained through cams and linkages which synchronize all operations.

New Shelter Tent Poles

The Army Quartermaster Corps is issuing new, lightweight tent poles for shelter halves. These

Above, a B-17 releases a newly developed, motorized lifeboat. Seconds later three parachutes opened, carrying the Flying Dutchman (shown slung in position below plane at right) to the water below.

come in three interchangeable sections which can be put together in any order. They weigh 7.5 ounces, about half the weight of the old poles. They are made from poplar and spruce, and are protected against splits by steel ferrules.

Dogs Trained to Spot Mines

M-dogs, new members of the Army's K-9 Corps, are now trained to seek out and spot land mines and other anti-personnel explosives. Training methods are secret, but it is announced that the basis of the new system is the dogs' inherent ability to locate buried objects. The dogs are taught to concentrate on discovering both metallic and non-metallic mines, trip wires, and booby traps. They lead the way to mines, or lead troops around mine fields. Dogs operate on six-foot leashes and signal their handlers when within one to four yards of the concealed device.

Heated Flying Suit

The F-3 flying suit now is replacing original models (F-1 and 2) for use by airmen at extreme altitudes. The new outfit has little insulating material, depends almost wholly on electricity. Wired in parallel, each shoe, each glove, jacket and trouser can be heated independently. Should one unit fail, the others will continue to operate. The F-3 is part of a complete outfit—long woolen underwear, GI shirt and trousers, electric suit, and intermediate suit of alpaca. Tests indicate the outfit will keep a man comfortable at minus 40°.

Portable Engine Hoist

Now designed to handle all types and sizes of aircraft engines, the Army's new A-7 portable engine hoist is to replace A-2 hoists now in use for general engine changes. The A-7 is transportable by air, weighing about 1,000 pounds, and is easily knocked down for transit. Mounted on three wheels, it also can be towed by a jeep at slow speeds. A hand winch with the unit has 4500-pound capacity, can be operated by one man.

Hot Weather Aid

Aircraft ground operations in hot weather are materially aided by a small mobile ventilator. The two-wheeled unit contains a power blower which forces air through a canvas duct into the plane.

Instrument Operation Improved

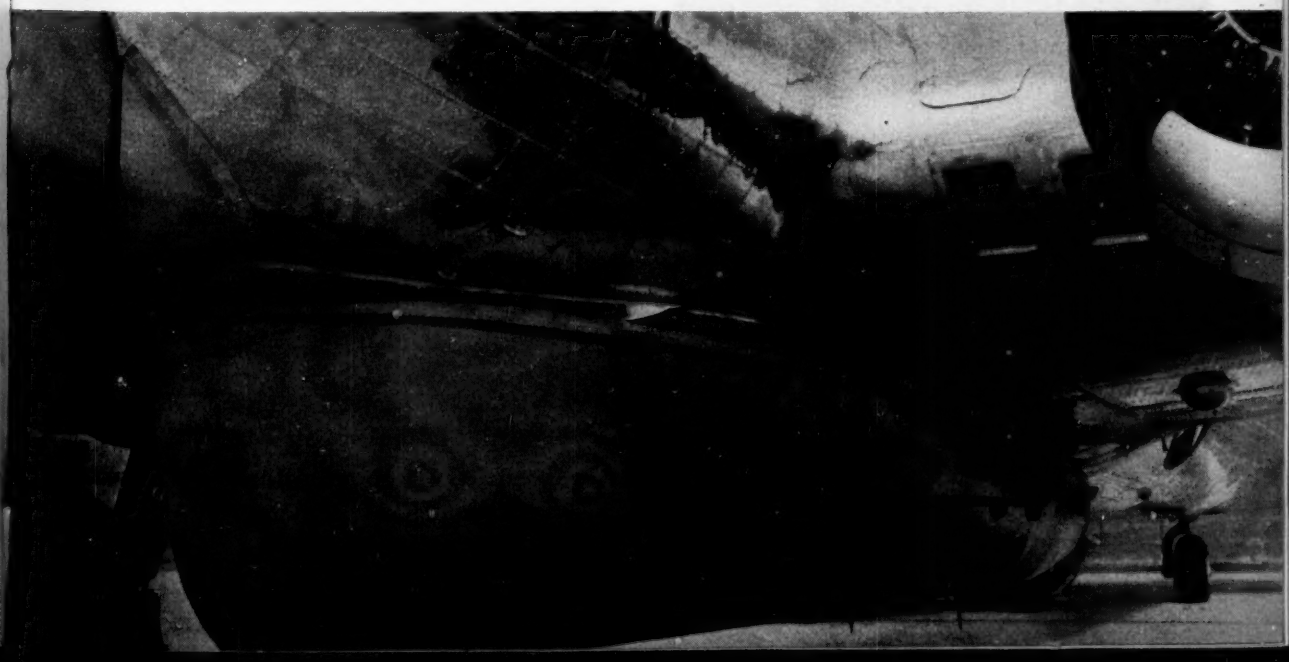
Small air pump which maintains constant suction in gyroscopically-operated instruments is undergoing tests. It is designed to improve instrument operations at high altitudes. The device consists of an engine-driven pump, a pressure safety-valve, and a throttling and unloading valve. The aim is to prevent overloading of instruments.

Transparent Pillboxes

Plastic pillboxes, transparent, with a dozen compartments, protect sulfadiazine tablets for servicemen from moisture and air. Wounded men can open the box with their teeth if necessary.

Most Minute Measure

Identification of the chemicals in a particle with an area less than one hundred-millionth of a square inch is now possible through a new electronic instrument developed by Dr. Ladlislaus Marton, associate professor of electron optics at Stanford University. This minute analysis is the most selective yet devised. The new device can also analyze extremely fine mixtures which cannot be separated by chemical or mechanical means. Similar to the micro-analyzers of recent years, the Marton scope is an improvement, since it can be attached



Operated by remote control and powered by two electric motors, this miniature tank is stuffed with high explosives. Yanks nicknamed the Nazi weapon "Doodlebug."

to a regular electron microscope and use its electron beams, developing thereby greater power than available to most micro-analyzers.

GE Jet Turbine Plans

The General Electric Company is setting up for production of jet propulsion aircraft turbines for the War Department. Some 600,00 feet of now unused floor space will be employed in the project, and jet specifications, prepared by GE engineers, have been turned over to another firm formerly engaged in manufacturing conventional plane engines. Pilots now flying experimental jet propelled fighters claim the plane has virtually no vibration, and this unusual stability has forced installation of a small instrument panel vibrator Without the vibrator, the smooth flight of the jet plane prevented proper actuation of the instrument needles and resulted in inaccurate readings. General Electric also has perfected electronic equipment capable of measuring speed of projectiles within 1/100,000 of a second. The equipment is now in use at the Army's Aberdeen (Md.) proving ground. It automatically measures the speed of a magnetized shell fired through a series of electric coils spaced 100 feet apart and records the speed on an electric typewriter.

The path of a German robot bomb, in flight over England, is traced in time exposure.

Nerve Grafts Make Strides

British surgeons are now making enormous progress in bridging severed nerve chains with "spare nerves" taken from other parts of the patient's body and grafted to form links between the broken chains. Heretofore, neuro-surgeons had been using spinal cords of rabbits for nerve fibre replacements, a practice developed in World War I. Another technique, now being considered, is the so-called homogeneous nerve graft, under which all nerve fibre from an amputated member would immediately be removed and preserved in a nerve bank for use in linking smashed nerve chains of other wounded men.

Automatic Oxygen Regulator

The only automatic, continuous flow oxygen regulator in use today by military aircraft (A-11)

weighs only nine ounces, and can supply sufficient oxygen for 15 men. Performance is continuous and efficient even at well-below zero temperatures. Vibration has no effect. Prior to its invention, the smallest regulator in use weighed more than four pounds and was controlled by hand.

New Bone-Wires Soon

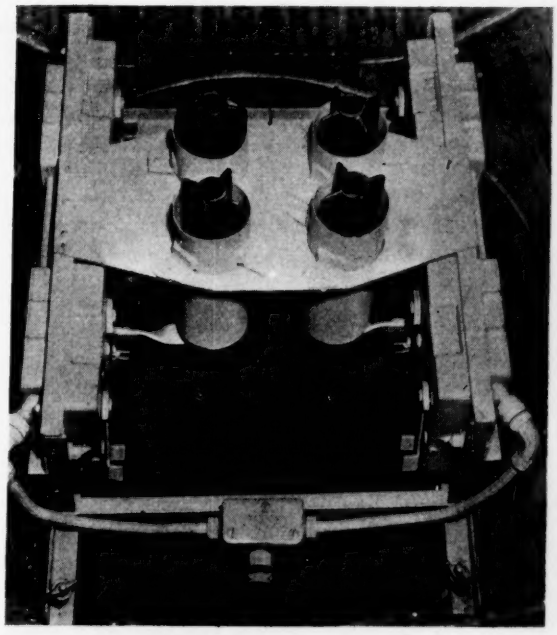
Malleable, corrosion-resisting tantalum plates, foil, screws, and wire to repair broken bones, nerves and skulls, soon will be available to civilian surgeons, according to plans now under way. Military surgeons have been using the new metal exclusively and have had much success returning to active life men whose injuries under World War I science would have been incapacitated. One veteran has a tantalum stomach wall. Nerves which control arm and leg motion have been stitched with tantalum thread, and facial paralysis has been relieved by small, saddle-shaped pieces of the metal, wired to pull corners of the mouth into normal position.

Dauntless Scrapped by Navy

Production of the Douglas Dauntless dive bomber was discontinued with completion of the 5,936th SBD, on instructions from the Navy. The discontinuance stems from development of the speedier and more powerful Helldiver.

Bermuda Base to Canada

The Royal Canadian Navy is setting up a training base at St. George, Bermuda, to be designated HMCS Somers Isles. Located on the eastern end of the Atlantic island, the base is the first of its kind in Bermuda, though Canadian troops have been stationed there for the past several years.

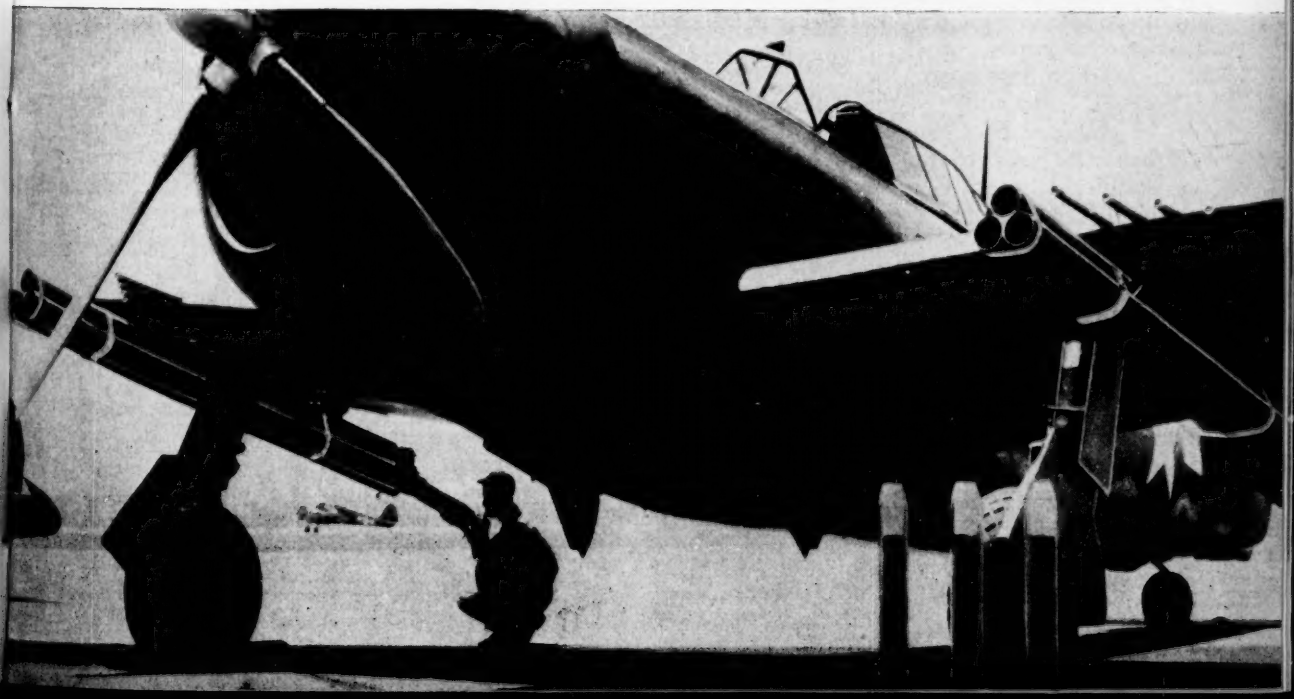


New miniature bomb rack for practice bombs installed in tunnel hatch of Mariner.

B-29 Engines Switched

Nacelles of the B-29 have been converted to house inline, liquid-cooled engines instead of the 2000 horsepower Pratt & Whitney motors. Experts report the replaced engines never gave the huge plane sufficient power.—Sgt. Ray Moulden.

Soldier loads rocket into one of six underwing tubes now being mounted on U. S. Army P-47 Thunderbolt fighters. Lethal plane also mounts eight machineguns.



Turkey Talks Turkey

Istanbul has sent the Reich's diplomats, "tourists," and undercover agents back home in a move that strikes a double blow to Axis hopes. One important result is the psychological effect in the Balkans. *By John H. Metcalf*

A GAZETTE
Background
ARTICLE

NAZI Germany, hard pressed on her fighting fronts, suffered a major diplomatic disaster early in August when defiant Turkey severed diplomatic and economic relations in the face of angry Axis threats of war. In plain language, Nazi Germany lost her striped pants.

As this article goes to press, it appears that there may be some tense weeks before the impact of Turkey's maneuver can be accurately measured. But, in any case, its assets will outweigh any liabilities that may be accrued by the Allies as result of this stinging slap on Hitler's exposed rear.

For Turkey it was not an easy task. She could have remained a friendly neutral. She preferred to become a non-belligerent ally. In this decision she undertook definite military risks. But in return for this gamble she secured a closer association with the United States.

It has been said many times by close observers that Turkey is a hard-headed realist. She deals in cold facts, has no taste for the frills of fiction.

But it seems to have been widely overlooked that the Allied diplomats at times are no slouches at realism themselves. Perhaps this fact more than any other accounts for the success of the Allied-Turkish conversations which terminated at Ankara in the Turkish-Axis break.

Turkey's contribution to the Allied cause can best be evaluated by a consideration of the assets and liabilities involved in her decision to sever her traditional ties to Germany. In this ledger, which Turkey no doubt will bring to the peace table, are a number of items which have not caught the eye of the average reader.

Here, then, are her salient contributions: The checkered diplomatic career of wily Nazi Ambassador Franz von Papen has been virtually brought to a close. He returns to the Fatherland in the dust of a bitter defeat from which he may never recover. The future of this powerful intriguer is indeed dark. He goes home at a time when his country is faced with grave dangers on all sides. Now well along in years, von Papen knows full well there can be no place for him in postwar Germany.

Along with him return the entire overstaffed Nazi diplomatic corps and some 3,000 German nationals, many of whom have long been engaged in questionable activities in Turkey. With them also go the Master Spy, Paula Koch, and some 2,000 Nazi agents who for many months have used Turkey as a base of operations from which they filtered into the Middle East and Near East behind the Allied lines.

Turkey's decision places on the alert a tough Turkish army of nearly 1,500,000 men, half of whom could be thrown into actual combat. Turkey has about forty infantry divisions, offering at least 600,000 front line troops. In addition, she has an armored brigade, four cavalry divisions, and eight fortress commands. Under full strength, Turkey can mobilize some 2,000,000 men.

She has a small but well-manned navy, although her ships are of old vintage. And in the skies she has a growing and fairly modern air force.

One of the most devastating blows Turkey has struck is the psychological effect of her actions, particularly throughout the Balkans.

Under her action, Turkey furthermore places herself in the justifiable position of closing the Straits and Dardenelles to all Axis shipping. She holds this right whenever she considers her country in imminent danger of attack. Considering the loud Nazi threats of war, Turkey has an open and shut case on this point. It is certain that Turkey would grant passage to any Allied ships if they could succeed in making the dangerous run past Nazi bases in the Aegean. It is doubtful if even fast destroyers would undertake the risk, but Allied submarines might get through.

The granting of air bases to the Allies remains a matter of speculation. But the very threat of this possibility adds another headache to Nazi strategists. In the event of a declaration of war, speculation would vanish quickly. The Allies would undoubtedly move forward through all avenues of land, sea, and air to make the new front as effective as possible.

But on the other side of the ledger are a number of important liabilities. It is no secret, for instance, that the Turkish army has been largely equipped with German armament, military supplies of various kinds. She will be hard put for spare parts in the event of war until this equipment can be replaced with Allied material. In transportation alone, the fact looms that Turkey's railroad rolling stock is almost entirely of Ger-

man manufacture. The same story is revealed in Turkey's industries which produce materials for war use. Thus, it would fall upon Allied shoulders to replace a large part of Turkey's war machine.

In her severance with Nazi Germany, Turkey has lost her Central European market for chemicals, industrial machinery, many kinds of manufactured goods, and a small number of aircraft and tanks. New markets must be provided. She will also need from the Allies supplies of glass, rubber, tin, woodpulp, and oil.

Some of her foremost metropolitan centers, such as Istanbul, are admittedly huge tinder boxes which would quickly go up in smoke and flame in the wake of Axis air raids. It has been proved over and over again that even the best defended centers cannot ward off air attacks, let alone rocket raids. Turkey's cities of narrow streets clogged with civilians are wooden duck targets for Nazi air forces. To give them reasonable protection, the Allies will have to shield them with huge umbrellas of planes backed by a concentration of modern antiaircraft. But on this point it appears that the Allies have stressed the word "reasonable."

One thing is certain. The Turkish Government would not have taken the plunge into severance of diplomatic and economic relations unless it were fully convinced that a complete Allied victory is just around the corner. Thus, to many observers it appears as nothing more than a last minute hitch to ride the Allied bandwagon into Berlin. This is not altogether true.

In the first place, Turkey's President, General Ismet Inonu, has stood firmly for his country's participation in the war for at least one year. If he had had his own way, Turkey would long ago have swung sharply to the side of the Allies. But each time he was about to act, political or military advisers interceded at the last moment with urgent pleas of caution. They pointed to various dangers and difficulties, to the needs for greater protection and assurances of Allied assistance. Each time some argument won out and Inonu's desires were temporarily staved off.

It is a safe assumption that open Nazi pressure and hidden Axis intrigue played its part in delaying the final break. But is to Turkey's credit that never, even in Great Britain's gravest hour, did she waver in her confidence of an ultimate Allied victory. Nor did she ever actually desert her treaty obligations, although she occasionally slipped out of Allied pressure through the technicality of escape clauses.

These loopholes to which Turkey resorted more than once ruffled her relations with the Allies. But, on the whole, it has all been to the good since the Germans were kept on edge and constantly guessing which way Turkey would turn.

Turkey took her position on the friendship treaties with France and Great Britain which were negotiated in June of 1939, and on her mutual assistance pact of October of 1939 with Great Britain. In a nutshell, they guaranteed British-French support of Turkey in the event of Axis aggression, and Turkish aid in the event of war in the Eastern Mediterranean.

When Italy declared war, Turkey was called upon by the Allies to fulfill her obligations. But she slipped out by pointing to an escape clause which stated that she could maintain her neutrality so long as Soviet Russia was not at war.

When on June 21, 1941, Soviet Russia was attacked by Nazi Germany, the British Government immediately renewed its request that Turkey come to the aid of the Allies. Once again Turkey slipped out. This time she pointed to another escape clause which guaranteed her not only British support but also vast munitions, planes, and military supplies. Already at wits end for enough armaments and supplies for herself and her active Allies, Great Britain was in no posiiton to comply with the Turkish demand.

But all along Turkey argued that as a neutral she was rendering the greatest possible military assistance under the circumstances. As a neutral she felt she was nothing short of a total blockade against a Nazi pincer drive which could squeeze the British in Egypt. It was a sound argument.

She further fastened her neutrality position by receiving assurances from Soviet Russia in March of 1941 and by signing a friendship pact with Nazi Germany in June of that year. At the same time, she emphasized to the Allies that her neutrality was strictly on a temporary basis and that her agreement with Nazi Germany in no way affected her military pact with Great Britain.

After that time several highly important developments occurred. The United States entered the war. Then gradually the tide of battle began to turn in favor of the Allies. Finally, at the famous Teheran Conference, the Turkish problem was brought to a climax. President Inonu met with President Roosevelt and Prime Minister Churchill. It soon became increasingly clear that these leaders had reached an agreement, that it was tied to Allied military strategy. Negotiations were opened in Washington, London, and Moscow. They resulted in final discussions at Ankara with the Turkish decision to sever diplomatic and economic ties with Nazi Germany.

The extent of Turkey's contribution must now await psychological, economic, and military developments. They can be far reaching in the coming weeks. But they may also simmer into another story of too little and too late. In the restive, explosive Balkans lies the answer.

Turkey, backed by her powerful, onrushing Allies has at long last thrown down the gauntlet to Nazi Germany. She has called the loud-mouthed bluff of war shouted over and over again by Nazi Foreign Minister Joachim von Ribbentrop.

It is Berlin's move next. END

Jungle Warfare

Continuing from the August issue a distillation of the best knowledge of jungle warfare gained by Marines who have fought in the Philippines, Guadalcanal, New Georgia, Bougainville, and New Britain. *By Marine Corps Schools, Quantico, Va.*

METHODS of communication that have been used in jungle warfare include radio, field phones, sound powered phones, runners, dogs, whistle, voice, pyrotechnics, flags and prearranged signals. Obviously some of these methods may be used under certain circumstances, and cannot or should not be used under others.

Radio

Types similar to the TBX are suitable in attack or defense. These types cannot be used while on the march unless the column is halted for about fifteen minutes for them to be set up, the messages cleared, and the sets broken down again. Accordingly, it is important that radio teams receive special training in speedy installation and break down of these types. These types can be used by battalions or higher echelons in the following nets: 1. Regimental, 2. Shore to ship, 3. Ground to air, 4. Forward observers to supporting artillery (if specially designed artillery sets are not available). 5. Combat or other patrols to base.

Radios in the jungle are from 30 to 60 per cent less effective in range than when they are used in normal or even lightly wooded country. Battery life is shorter. An initial supply of batteries for jungle use should be twice the initial supply required in a temperate climate. Provision must be made for additional carriers for communication, equipment, which will include the extra supply of batteries previously mentioned. If no native carriers are available, personnel must be detailed for this purpose. Radio personnel must have the determination to get the traffic through, with emphasis on reliability more than speed. They should be trained in the proper installation and setting of antennae to get the maximum output from their sets. Radio communication will be especially difficult at night, and thorough training and indoctrination of personnel will be necessary to keep breaks in communication during that period at a minimum.

The use of ultraportable radios in the jungle is restricted; their effectiveness depends to a great extent on their location. Dense undergrowth and precipitous slopes have a screening effect. Personnel must be trained where to set up radio sets to best avoid the screening effects of jungle terrain and vegetation.

Radio personnel must take part in all preliminary conditioning work. In addition they must receive a thorough indoctrination course in all weapons of the rifle company.

Telephones

The field phone continues to provide the most satisfactory communication in the defense. In a fast moving attack, or a deep enveloping or circling movement, wire teams will generally not be able to keep up. If the attack is progressing, it should not be held up for the installation of wire; but wire teams must follow movements as rapidly as possible. In the defense all lines should be paralleled. Initially, wire will have to be laid on the ground; later, when time permits, it should

be tied in the trees or buried. Rains and dampness have a considerable effect on the talking range of long lines using light assault wire. To be useful, in all weather conditions, ground return circuits will be necessary on such lines. As conversations may be intercepted by the enemy, strict supervision of use of these lines is essential. Special voice talkers, or prearranged codes or ciphers should be used, and the ground return telephone circuits supervised in the same way as voice radio nets. Unless heavy wire can be laid, which is not likely in thick, rugged terrain, relay stations may be necessary in order to maintain suitable wire communication. It must be emphasized that a moving attack will, under no circumstances, be held up for the installation of wire. If wire is laid, it is the responsibility of communication personnel to lay it as rapidly as possible.

Sound powered phones are valuable. They are reliable, light and easy to handle. When used with assault wire, they can be employed for communication from assault companies to the rear. They are especially useful to connect observation posts with command posts and for use in con-

trolling mortar fire. Reconnaissance patrols working forward of our lines have used sound powered phones satisfactorily. If sufficient of these phones are available, they will prove valuable for use within command posts at night. Their use will reduce movement within the command post to a minimum. In the defense, each front line platoon should be provided with a sound powered phone.

Other Means

In battalions, companies and platoons, runners are the primary means of communication both within moving columns and in the attack. In the defense they supplement wire. The runners should be picked men; selected for their reliability, intelligence, stamina, courage and initiative. In addition to the regularly detailed runners, other personnel must be trained so that they can replace runners who are casualties or temporarily become non-effective because of exhaustion. There can be no compromise on the question of runners without inviting all kinds of trouble. There is no substitute for good runners.

All runners must be skilled scouts and good shots. They must be able to read maps and air photos, to make sketches and overlays. They must be alert and observant.

Dogs have been satisfactorily used in jungle operations both as scouts and as messengers. Trained dogs have proved themselves under conditions of actual combat. It is anticipated that dogs will be commonly used in the future. Undertrained dogs or dogs for whom no handlers are available should never be taken on a jungle operation.

Whistle signals may be used in the jungle. Most frequently they are used to indicate that unidentified or enemy planes are approaching or are overhead or that all is clear.

Communication by calling is usually satisfactory in platoons and squads either in attack or defense. In large units voice communication during movement is unsatisfactory. During all training the necessity for "passing the word" correctly must be emphasized. It is remarkable to what extent a simple phrase can become distorted after passing through four or five men in a column. During a fire fight, platoon and squad leaders will have considerable competition in the form of battle noises and the jabbering of the Japanese. However, if they have strong vocal cords, they may generally be assured of communication.

There is an almost unlimited field for the application of pyrotechnics as a means of signal communication in battle. They may very frequently be used to call for fires; to announce the jump off of an attack or the seizure of an objective; to call boats in; to indicate general locations at which drops are to be made, or to indicate certain types of enemy movement or activity. Pyrotechnic signals must always be fired at least twice with a specified interval between the rounds.

Semaphore, while of no use in the jungle, is valuable to signal along beaches or from shore to ship.

Small patrols always plan to use prearranged

signals. Prearranged signals will indicate such commands as "Halt," "Down," "Danger," "Forward," "All clear," etc. Patrols should carefully rehearse such signals before their departure.

Supply and Evacuation

Because of lack of trails and roads, supply and evacuation for jungle columns will often be by air, boat or carrying parties.

If advanced air fields have been established to support a jungle operation closely, all supplies may be flown in and casualties flown out. Our air force demonstrated in New Guinea and on Guadalcanal that it is capable of carrying any type of supplies or equipment that the ground troops need including bulldozers and 105 mm. howitzers.

If no fields are available, supplies will often have to be dropped. Drops may be restricted to food, clothing, shoes, medical supplies, ammunition, radio spare parts, batteries, etc. The rear echelon representatives should supervise the packaging of drops and assure themselves that the service of supply fills all requisitions precisely as requested. If a request includes ninety pairs of shoes, for example, and lists by sizes the number of pairs desired, it must be filled exactly.

Parachutes and containers will always be salvaged for eventual return to aviation. In most cases the parachutes will have to be recovered from trees. After they are recovered, parachutes should be spread out on bushes to dry before they are bundled up. If the column is to move the parachute and containers should be cached for collection at a later date.

Ground troops indicate their approximate position in the jungle to dropping aircraft by smoke signals or by coaching the planes in by voice radio. Orders issued prior to the start of the operation

will set forth frequencies on which dropping planes will operate with ground troops' radios. Colors of smoke and the types and colors of pyrotechnics to be used will also be indicated. Short burning flares are not satisfactory for communication with dropping planes.

The pilot will have a good chance to see parachute flare signals if they are repeated.

Seaplanes can often be used to bring in supplies or to take out casualties. If the use of seaplanes is anticipated, radio frequencies on which troops will operate with them must be established.

Long range seaplanes suitable for supply and evacuation generally do not operate under control of the attack force commander.

Supply and evacuation by boat is often the only means available.

In the jungle one means of keeping supply up is by the use of carriers. Carriers cannot pack more than forty pounds per individual over jungle trails. If carries are long and hard the weight must be reduced. Considerable experience indicates that a one way daily carry of thirty pounds is maximum load over jungle trails for periods in excess of a week. The Army has recently developed and issued a pack board.

Care of Weapons and Equipmen:

The humidity, mud, and frequent shortage of oil and other materials necessary for cleaning weapons combine to make weapon maintenance in the jungle difficult.

Our weapons and equipment are the best and will not go to pieces unless we let them. All weapons and equipment must receive constant "Preventive Maintenance" (PM). The potential battle efficiency of a combat unit undergoing training can be determined almost precisely by the condition in which it maintains weapons and equipment.

Equally this reflects the military qualities and character of its officers and NCO's.

One of the most important duties of subordinate leaders is frequently to carry out personal inspections to determine the state of maintenance of weapons, ammunition, magazines, spare parts and accessories. Time and circumstances will rarely permit a thorough inspection of all weapons in a platoon at one time. Frequent random inspections will be more satisfactory.

All personnel (including officers) of a unit operating in the jungle are required to carry individual four ounce cans of cleaning and preservative oil. Extra gun oil must be carried by members of machinegun squads.

Four cleaning rods per rifle squad is a reasonable initial allowance. One of these should be carried by each fire team and one by the squad leader. Patches should be carried by each person.

Breech mechanisms can be protected by the oil soaked cloth previously mentioned.

Accessories, spare parts and magazines will rust and deteriorate rapidly if not cared for diligently.

Optical equipment such as mortar sights, telescopes and field glasses should receive special care. Field glasses and compasses may be wrapped tightly in pieces of dark colored cloth. This cloth will keep the moisture from fogging and eventually ruining them.

All machetes must be sharpened and oiled before going into a jungle operation. If one man in the squad can carry a small commercial stone, it will be found helpful for sharpening machete blades which seen get badly dulled and nicked.

A tendency exists to throw dirty clothes away and to draw new outfits whenever possible. When the situation is an active one, this is to be expected as no time exists for washing clothes. When the situation is stabilized and time, soap and water are available, dirty clothes should be boiled and washed.

Immediate disciplinary action must be taken when men, through carelessness, waste or lose their equipment. Much will be lost and ruined legitimately incident to training and active operations and these losses are expected and can be condoned, but wastage du to carelessness is a serious offense.

Combat Intel!igence

Combat intelligence is produced from information of the enemy that is secured on the battlefield. Information of the enemy units present, their strength, equipment, weapons, dispositions, morale, state of supply and general physical condition is vital to our operations.

All information of the enemy is important and continuing efforts must be made to collect it. Any scrap of information, regardless of how trivial it may seem, must be reported.

All information secured by whatever means, is passed on to intelligence officers of the higher staffs. All captured enemy weapons and equipment

will be turned over intact as captured to intelligence for inspection, pending its further disposition. Local rulings usually exempt such items as rifles, swords, pistols, helmets, flags, and daggers from this requirement.

All OP's are required to keep a record of what is heard and seen from them. Intelligence officers inspect these records several times daily or more frequently if necessary.

Although it does not result in the production of combat intelligence, information of the terrain is of vital importance for terrain is one of the determining factors in arriving at decisions and in formulation of plans.

Counter-intelligence Measures

The enemy is as interested in us as we are in him, and he may be expected to employ all possible means to gather information vital to development of his own plans. We must do everything possible to prevent him from securing this information and to mislead him to such an extent that the information he does secure is not sound.

In a defensive situation, we attempt to screen our activities from the enemy by constant and aggressive patrolling. By this means, we prevent the enemy from getting close enough to observe our activities and the progress we are making in the development of our installations.

Concealment of installations is essentially a counter-intelligence measure.

If captured, a Marine is required to give his name, rank and serial number when interrogated. He will give no other information.

The enemy will make every effort to get planes through for the purpose of taking air photos. Consequently, we must conceal our dispositions and activity by means of camouflage. On the approach of unidentified or enemy planes overhead, our forces will immediately conceal themselves.

Radio silence will be observed as called for in operation orders and radio traffic will be handled strictly in accordance with signal operation instructions. During battle some radio communication from battalions down will be over ultra-portables in the clear. Code names will be used.

Since most of our telephone lines are ground return, we must remember that the enemy can hear as well as we can. Therefore, front line units should use special talkers or codes when carrying on telephone conversations.

Maps, Sketches, Charts

Maps of South and Southwest Pacific jungle islands, while generally correct in delineation of the coastline, have, in most cases, been worthless insofar as representation of ground forms is concerned. Although the principal rivers may be shown, there are countless unnamed streams, inlets and lagoons which are not indicated.

The large island north of New Georgia is shown on all maps as Kolombangara, and it may have been so called many years ago when the maps were made. Now, a mention of Kolombangara to a New Georgian native elicits a blank stare. The natives know the island as Nduki, pronounced "dookey." Similarly the "village" of Triri shown on maps of New Georgia is actually not a village at all but simply the designation of a place where large sea bass can be caught. Further, the natives do not pronounce the name as "Triri" but as "deedee." The battle of the "Tenaru" as actually fought on the "Ilu." These are but several countless scores of examples which illustrate how wary one must be in dealing with information found on most maps of the jungle islands.

Many an otherwise obscure missionary or island trader has had his name immortalized by calling rivers and peaks after himself and his friends. A river called the Wharton River on a map is known to the natives, who labor under the handicap of never having heard of the eminent Mr. Wharton, as the Pundakona. Smith Island on the map may be Vela, as Florida in the Solomons is Ngela (Pronounced Gayla) to the natives.

Maps must be corrected at every opportunity. This is the duty of all officers, who should send copies of corrected maps to higher headquarters where corrections will be consolidated, and new maps prepared.

Many of the charts of the jungle islands are old and some of the data may be incorrect. Information secured from old charts should be checked for accuracy with former traders, missionaries and those who carried on inter-island commerce or who have lived on the islands.

Air photos are the most accurate source for preliminary study. Mosaics and strips are satisfactory for general study. Stereo pairs and vectographs provide a means of studying ground forms in some detail. The information of ground forms secured from the study of these types of air photos can easily be transferred to other maps.

Aerial photographic requirements must be anticipated and a complete schedule of requests presented to aviation well before the commencement of an operation.

Photo maps should receive wide distribution and those applicable should be placed in the hands of all concerned including platoon leaders and platoon sergeants.

In many of the islands of the South Pacific there are native fruits and vegetables such as coconuts, papayas and taro. Troops in rear or staging areas will be able to fish. The waters around the islands abound in fish.

Most cooking in the jungle is done by individuals or small groups of men who pool their resources and prepare food for themselves in one or two containers. Generally, the only cooking vessels available will be the helmet, empty "C" ration cans, the canteen cup or the top of the mess pan. Men must be instructed never to eat with their hands. They must always use a utensil or they must fashion a spoon out of the top of a ration can, or a piece of cardboard from a ration container.

Engineers

Engineers will be found most essential in jungle operations where they will be required to build new roads, to improve existing tracks and trails, to build bridges, to assist in camouflaging dumps and other installations from enemy air planes, and to assist with their advice and tools in the development of defensive positions. In the first phases of a jungle operation, engineers will be required to use such materials as are at hand for these projects. Heavy engineer equipment is not available initially.

The purification and distillation of water, the construction of water storage tanks, reservoirs, and the establishment of water points are engineer functions.

Engineers are used when available to clear enemy mine fields, to lay mine fields, and to execute demolitions. In jungle warfare, these are not their primary duties.

Engineers are so busy during the initial stages of an operation with road improvement, bridging and the establishment of water facilities that they have little time to devote to anything else.

Casualties

Men who are wounded in battle must realize that by calling for a corpsman they first waste their own needed strength and second jeopardize their own lives as well as that of the corpsmen. A corpsman can only be at one place at one time. Doctors and corpsmen are so valuable to an organization that their lives must not be placed in jeopardy any more than is necessary.

Wounded generally suffer from shock for a short period and they should not attempt too much movement, but when there is better cover nearby, and the wounded man can reach it under his own power, he should attempt to do so. Wounded must bandage themselves as well as possible. Men should receive training in application of a bandage to a leg wound or an arm wound using one hand.

If the men are equipped with individual jungle first aid packets, they must be instructed in the use of the contents.

Except when ordered by an officer, men under no circumstances will withdraw from a fire fight to carry wounded to the rear. The duty of every Marine is to continue the fire fight, for the best way to assure that wounded comrades are in safe positions is to press the attack forward beyond them. Doctors, corpsmen, and litter bearers can then operate rapidly and efficiently.

Ammunition

The unit of fire established in TBA is a unit of measurement set up for supply purposes. It does not represent the amount of ammunition that is expected to be consumed in a day or a week or in any stated period of time in jungle combat.

Men need not be arbitrarily ordered to carry the number of rounds of small arms, or mortar ammunition, or of grenades established in TBA. In some cases, circumstances will dictate a reduction in the TBA figures; in others, it will be found desirable to increase them. The tactical situation as well as the difficulties of terrain to be overcome must both be taken into account in calculation of ammunition loads.

If a column is to move for any distance in the jungle, it may be impossible to carry one unit of fire in mortar ammunition and maintain the desired rate of march. Accordingly, this category may have to be cut down, or carriers used.

Seasoned troops will conserve ammunition; poorly trained troops will waste it.

Special Equipment

Tennis, basketball or Army jungle shoes are valuable items of special equipment. When possible at night men should remove the shoes they have on during the day and put on tennis shoes. This will help rest and relax the feet. These shoes are also valuable for short scouting missions.

Dark kid or leather gloves are useful in the jungle to protect hands against briars and thorns.

A short machete-like blade for officers is a desirable item. The Collins "Legitimus" knife as furnished to the Army Air Corps, or the L. L. Bean machete have proved satisfactory and durable.

Lost and Found

Restoring personal effects to Marines who have become separated from them either in the States or overseas falls to a unit at San Diego; the department is batting .950 in reuniting fighting men with their "long lost" seabags and boxes.

A Marine just back from overseas duty was greatly surprised recently to find that a seabag he had lost in New Zealand a year and a half ago was being held for him at Camp Elliott, San Diego, Calif. In another case, a captain who also had just returned from the South Pacific, was also a bit startled to receive a letter asking what, please, did he wish done with a certain item of luggage. He had lost it two years before.

These weren't coincidences. They represent typical examples of the work being done by Camp Elliott's Unclaimed and Missing Baggage Section.

The section, operating under Base Depot, was activated last January. To this section the problem of Marines becoming separated from their effects is an old one. The results of the first three months of operation speak for themselves. In that period the section has restored nearly 2000 assorted seabags, lockers, boxes and other items to their owners, many of whom had given up hope of ever recovering their property. And the list of satisfied "customers" is growing daily.

Patient, dogged sleuthing is the key to the section's success. When an unclaimed piece of luggage finds its way to the "Lost and Found" warehouse, a series of tracing letters in search of the owner are started.

Sometimes the section has to track officers and men through five or six transfers, across the nation and, on occasions, to the other side of the Pacific. The department nearly always gets its man. The score of pieces returned is now better than 95 per cent. Much of that other five per cent consists of a pile of seabags whose owners have been listed as killed, missing or prisoners. Even so, one or two of those seabags comes out of a pile each week as owners, previously listed as missing, are reported safe.

One of the first jobs undertaken by the section was to visit the Santa Fe Railroad depot, Railway Express, bus depots and similar places in San Diego to gather up Marine Corps luggage which hadn't been claimed. Soon items were finding their way to their owners. This move aided in relieving congested conditions at the storage centers, and brought letters of praise from agency officials. A truck from the section now makes the trip to San Diego daily, picking up lost luggage. Other misplaced items are forwarded to the section as a matter of routine.

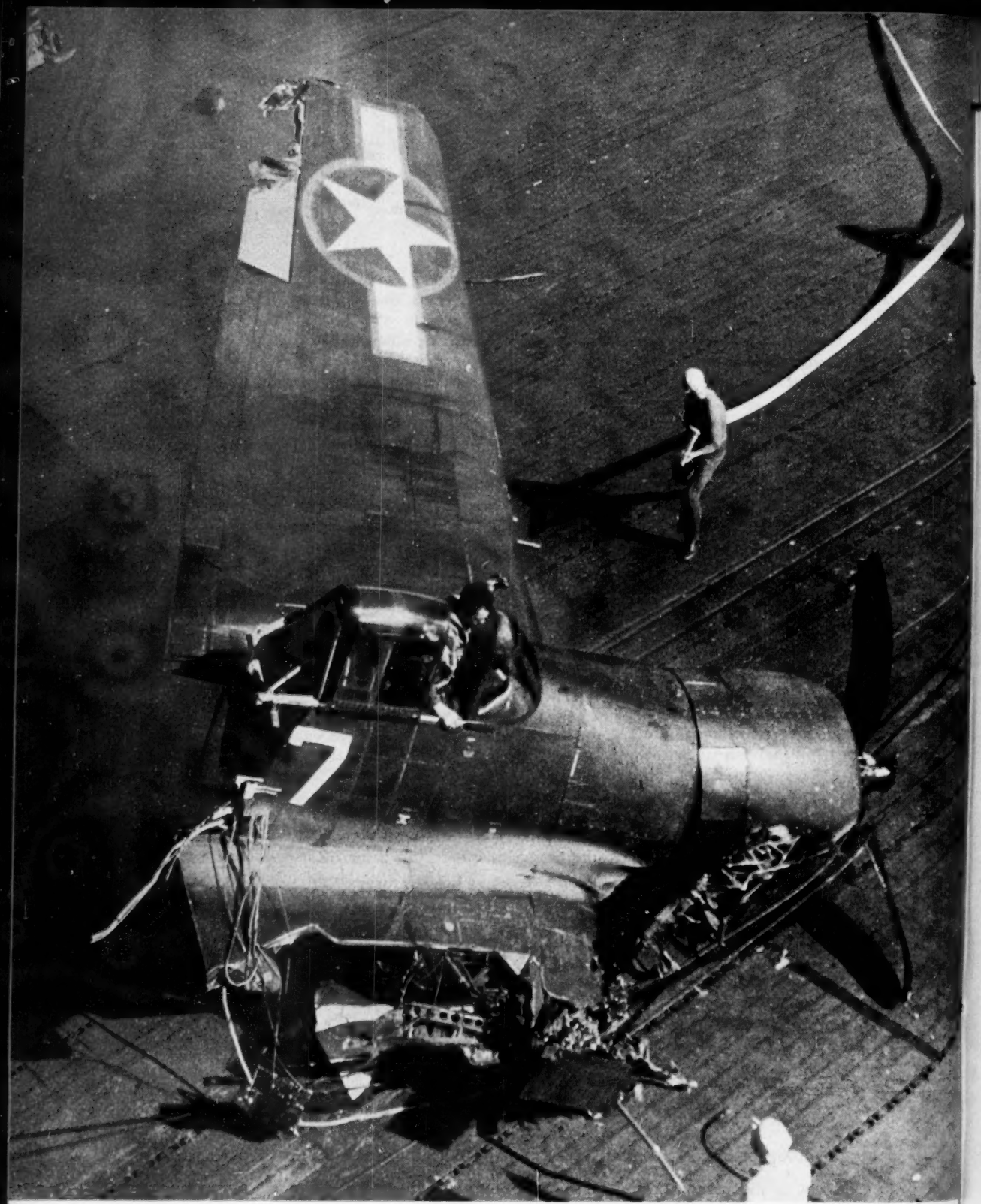
Poor or improper marking is blamed as the chief reason for losses of luggage. In many instances, however, an item goes astray through no fault of the owner. Seabags have arrived at a port after the owner has already shipped across. In other cases, luggage has been held for transportation or storage charges and the owner transferred before he could get the money to pay the charges.

The service rendered by the section is not only producing a lot of happy Marines, but is effecting a considerable saving through the elimination of re-shipping charges and storage fees.

Words of Wisdom Gone Astray

A group of officers aboard a U. S. warship returning to Honolulu from Kiska were discussing the perfidy of the Japs in slipping away through Aleutian fogs before our forces could take a crack at them. There was deep speculation over who would bear the brunt of the anticlimax.

"Chances are it will be me," said one young Naval Officer. "I'm the guy who ordered 100,000 propaganda leaflets dropped on Kiska a few days ago—a full 100,000 leaflets, and not a living thing on the island but a goddam dog. And he couldn't read!



Palau, and Back Again

Hellcat pilot, his plane riddled over Palau, brought his unmanageable ship back to the carrier, slid in, shearing off a wing and the tail on a turret and still managed to land. He is shown leaving his "plane," only slightly scratched.

Aviation

Reports and Comments on the Military Uses of Aircraft

Boystown for Birdmen

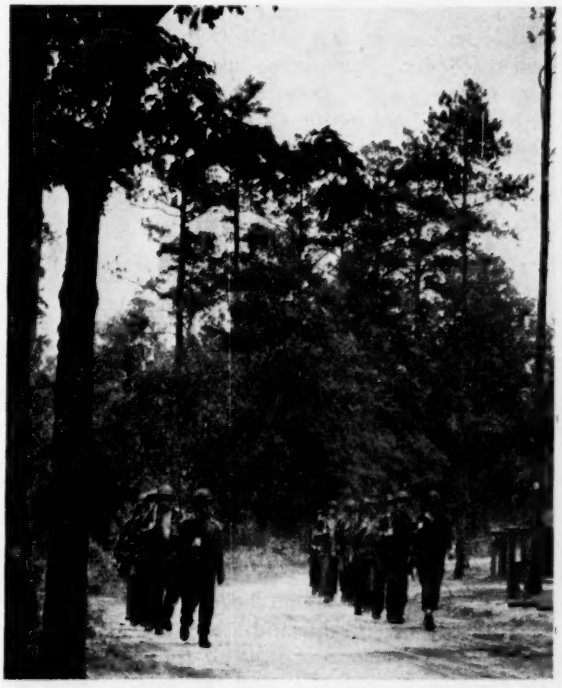
A unique infantry training school for pilots was widely publicized in the press late in July as the result of a trip to the Marine Air Station at Cherry Point by a dozen nationally known aviation editors and special correspondents from newspapers, radio, wire services, and magazines.

The press invariably tagged the school "Boystown for Birdmen" as it is known among the airmen at Cherry Point as a hangover from the days when the camp was a rehabilitation center for enlisted men.

Dedicated to the purpose that "All Marine, line or airborne, shall intelligently speak the same language," the combat training course for pilots is actually a concentrated amphibious course, designed for jungle warfare.

During their several strenuous weeks at "Boys Town," the pilots, fresh from flight schools, are drilled on how to perform like Marines of the line. They learn, the hard way, how Marines live and fight in the field, what weapons they use and how to employ them. They learn judo, and how to fight with bayonets, knives, and clubs; scouting and night patrols; use of compasses, bivouac security, field sanitation, close order drills, foxhole construction, and the use and maintenance of rifles, grenades, and mortars.

The finishing touch in the curriculum is an amphibious landing which is supported in strength by fighters and bombers, to give the wet and bedraggled pilots on the beach a view of how air support works from the other side of the fence. They find it teaches teamwork, personified.



Pilots undergo rigorous infantry training at "Boystown for Birdmen" (Cherry Point).

Superfortress, Kingcobra, What Next?

Perhaps the best reason for believing that we are close to the end of the war is the great plane-name crisis. Aircraft manufacturers are speedily approaching the *ne plus ultra,* and it seems obvious they will soon have to stop producing new plane types because they will be unable to find suitable names for them.

Popular names for combat planes, such as Dauntless, Avenger, and Catalina, were adopted by the Army and Navy at the instigation of the manufacturers, who felt that designations such as SBD, TBF, and PBY were far too complicated for the average man to keep up with. They felt that names would be more easily recognizable and would facilitate publicizing their products. The British had long been using names rather than letter designations.

As soon as the name system was adopted, the manufacturers began to search for names which would indicate the striking power of their planes, and tell the public how efficient their products were in wreaking destruction on the enemy. Among those adopted were: Aircobra, Devastator, Havoc, Marauder, Wildcat, Avenger, Thunderbolt, Lightning.

The names chosen were ingenious but, in most cases, shortsighted. The manufacturers had started at the top and they soon found that they wished to go higher. To complicate further the problem of discovering fiercer, stronger names for their newer planes, they tried to cash in on past publicity

by adopting stronger but similar names. Grumman started with the Wildcat and managed to eke out Hellcat for the F6F, to indicate that here was a more powerful fighter in the cat family. But with the advent of the F7F, Grumman found themselves at the end of their rope. To date they have rejected suggestions like Tigercat, Tomcat, Supercat, Deathcat, Firecat, and Killcat. The plane is as yet unchristened; every name seems like an anticlimax after Hellcat.

In the same way, Bell has recently announced the production of a successor to the Airacobra which will be known as the Kingcobra (P-63), and the Boeing Fortress has been succeeded by the Superfortress. But those companies seem to be finished for the duration—or shall we have a Kingkongcobra and a Superduperfortress? The war must end soon.

No Zeros—No Aces

After nearly two years in the headlines, Marine aces have been conspicuously absent from the nation's newspapers in the past six months.

Not since the days of "Pappy" Boyington and "Butcher" Bob Hanson have Marine fighter pilots figured in the stories of the super-aces of the current air war. This in spite of the fact that Major Joe Foss went back into action in the South Pacific short only one (now two) of the top record of planes *shot down* in combat.

The answer is very simple. No Zeros, no aces.

When Foss and his Circus went back into action, it looked as though he would fill the void on the top rung of Marine aces left so barren by Boyington and Hanson. Both of these aces turned up missing in action during the furious air battles over the Rabaul-Kavieng area during the early weeks of this year.

Their hot streaks were snapped (Boyington at twenty-six and Hansen at twenty-five) just at the time when it was almost obvious that they would hang up an all-time record for any American pilot to shoot at. The odds were all in their favor. The air over Rabaul and Kavieng swarmed with Zeros, week after week. Yet their time came when the hunting was at its best.

Then, just as Foss (original holder of the twenty-six plane mark) returned to combat in the South Pacific area, the juicy canopy of Zeros at Rabaul evaporated as if it were a pin-pricked balloon. He had no opportunity to raise his score. Three months of Allied fighter sweeps were just too much for the Japanese. The merciless mauling of the Jap air defense there wiped out every expendable plane the enemy had.

Business was so bad in that area for Marine pilots after mid-March that in their relentless but bored searches, patrols, and sweeps over New Britain and New Ireland, they would gladly have looked under rocks had they the least suspicion that a stray Jap plane might be in hibernation there.

On March 15, Captain James Walley flushed what seemed to be the last of the enemy. He shot down a Zero over southern New Ireland. That was the last verified kill in the South Pacific area for three months. Foss and his Circus were in that theater, very anxious for business that never materialized.

Not until June 13 did a Jap plane come within sight range of Marine pilots. Lieutenant Roland Heilman forgot his amazement at meeting this buck-toothed Dr. Livingston long enough to shoot the Zero down in flames near the battered Kavieng air field.

But things are bad all over. Marine fighter pilots in the Central Pacific have suffered the same dearth of combat. Their last meeting with airborne enemy was on March 26. Major Loren ('Doc') Everton's "Whistling Devils" disposed of twelve of the thirteen enemy planes that challenged them in the Eastern Carolines on that day

Since that time, Marine fighter pilots who spearheaded the air march from Guadalcanal to Rabaul have been saddled with the enticing job of glorified garrison duty, and milk run bombing strikes. That while their fellow Marines in the line have waded ashore on one invasion after another—Tarawa, Kwajelein, Namur, Saipan, Guam and Tinian . . . without the help of the Marine air arm.

Needless to say, the pilots and aircrewmen of Marine Aviation in the Central and South Pacific don't relish this rear-area duty without air opposition when their prime reason for existence is to perform the vital close air support so integral to the success of the other half of the Marine air-ground team, wherever the line happens to be.

Until such time as the Marine air arm is restored to its place as the airborne spearhead in the triphibious Marine landings, it will remain out of the first-team combat class—and, very secondarily, out of the headlines.—Capt. Jack De Chant

Cooperation at Sangigai

The story of the raid on Choiseul Island by the 2d Parachute Battalion (Reinforced) in October of 1943 has already been told.* An important part of the story is the action which took place near the village of Sangigai on the morning of October 30. The story has been told vividly except for the role of Marine aviation units in the dawn attack.

Marine aviators stationed at Munda were extremely interested in the progress of Lieutenant Colonel Krulak's Paramarines on Choiseul. Thus the word that "the boys on Choiseul need some help" was enough to squelch the usual grumbling when a dozen torpedo-bomber pilots and as many

* See: "Mission: To Raise Hell," by Captain Richard G. Hubler, MARINE CORPS GAZETTE. March 1944. pp. 33-39.

fighter pilots were rolled out of their sacks at 0300 for an unscheduled strike on October 30.

At the briefing, the pilots were shown maps and aerial photographs of a Jap concentration one-quarter of a mile northwest of the village of Sangigai. Takeoff was at dawn and the formation of Avengers, Corsairs, and Kittyhawks was over the target area at 0645. The Avengers dumped more than five tons of 100-pound bombs in the target area, and the fighters followed with a vigorous strafing attack.

When questioned about the efficacy of the air support, Lieutenant Colonel Krulak said: "There were about three times as many Japs as we had expected to find, and they were in well-constructed pillboxes. We probably would have had our ears pinned back. That's why we asked the planes to take a crack at them. The planes arrived exactly on time and put their bombs just where we wanted them. It was a beautiful job."

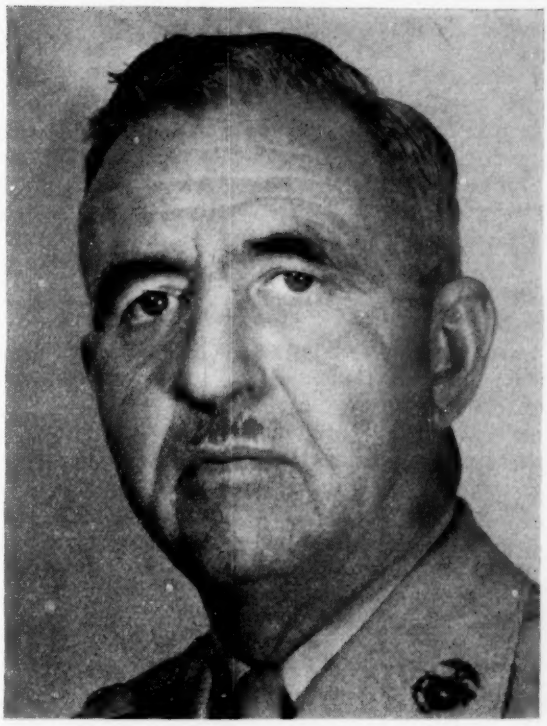
The victory at Sangigai was, of course, primarily a victory for the ground forces. But Marine aviators were there when they were needed, and did their part of the job. Sangigai should be added to the growing list of actions in which Marine air and ground forces fought as an integrated unit.

Close Support Bombing—Early Style

Marine pilots of Dauntlesses and Avengers take great pride in the work they have been doing to support Marine ground troops. They tell of missions against front-line Jap positions within a few hundred yards of our own troops, and of the successful completion of such missions without any bombs coming even dangerously close to our own lines. One bombing and strafing attack upon a Jap-held salient on Bougainville presented the dive-bomber and glide-bomber pilots with a target less than 800 yards across, with our own forces entrenched in *three sides* of the target. The accuracy of the bombing was praised by the commander of the ground troops and described as "threading the needle."

It is no secret that missions of this type are not a new assignment for Marine pilots, but it has seldom been pointed out how far back the history of close-support bombing extends. On October 5, 1918, Marine pilots in nine DeHaviland-4's and DeHaviland-9's bombed a German position on the south of the Yser River. Each plane carried ten twenty-five-pound bombs in the cockpit, which were lifted out and dropped over the side by hand. The only "bomb-sight" used was the eye of the man leaning out of the cockpit to drop the bombs. The bombers skimmed over the target at 100 feet, attaining a speed of about 130 knots. The target was strafed with two fixed guns forward and one free gun in the back cockpit.

The ground command had requested that "all available aircraft" be used against the stubborn German position. The flying Marines were short on aircraft, but not on energy, for they increased their availability by flying nine missions apiece in one day. Each sortie took about forty minutes. Cocky young pilots of this war, who might be tempted to scoff at the accuracy of hand-held, eye-aimed bombs, should note particularly that Allied troops watched the bombing from their trench, which was but *400 feet* from the target!



Brigadier General Field Harris has been appointed Director of the Division of Aviation, succeeding Brigadier General Louis E. Woods. Gen. Harris is a veteran in the field of coordinating land and air operations in Marine Pacific engagements.

Ships to Planes; Three to Twenty

The amazing growth of Navy and Marine Corps aviation as compared with the growth of surface forces was revealed in a recent Navy Department release. The completion of the destroyer escort USS *Grady* on August 18 brought the number of combatant ships in the fleet to three times the number the Navy had in July 1940. But in the same period of time the number of Navy and Marine Corps planes on hand increased almost *twenty times*. The exact number of planes on hand was not revealed, but the difference in the two rates of increase is indicative of the growing relative importance of air power.

"Mighty Midgets"

The Superfortress, glamourous because of its size, bomb-capacity, long range, armament, and armor, has basked in the limelight since its recent combat debut. No newcomer to combat, however, is the unpublicized artillery spotter plane which carries no bombs, has an extremely short range, has no armament other than the pilot's .45, and has as protection only a fabric fuselage. These "flivvers" have proven their prowess and earned nickname of "Mighty Midgets of Saipan."

Among the first aircraft to land on the captured Japanese fighter strip near Charan-Kanoa on Saipan was a Stinson "flivver" piloted by Maine First Lieutenant John N. Barbas. The rest of the squadron arrived shortly thereafter and began its observation of enemy activity, despite the hazards of taking off and landing on a shell-pocked strip. Floating along almost at tree-top level, the "flivvers" made fine targets for enemy antiaircraft guns, machineguns, and even rifle fire. Their most important protection was the unwillingness of the Japs to give away their positions by opening up on the observation planes.

Flying slowly enough to study the ground carefully and as low as necessary, the pilots of the "flying jeeps" are in an excellent position to act as the eyes of the artillery. The observer is in constant radio contact with the battery for which he is spotting and his reports can be made, the range or deflection corrected, and another round fired in a matter of seconds.

When they are not actually busy spotting for artillery, the pilots are free to wander in search of Jap supply areas, gun positions, and encampments.

In addition to their value as spotters and scouts, the "flivver" planes have a definite morale value. An infantryman is likely to feel optimistic when he sees a ofriendly plane roaming at will over enemy positions. An artilleryman is likely to realize that the pilot whose observations pay off directly in hits on Jap installations is really an integral part of the Marine Corps.—Capt. Warren H. Goodman.

The General

By LOWE

"But he doesn't want to play—he only wants to count cadence."

U.S.S.R. On Shuttle Route

Russian bases become the third angle in a three-sided attack on Nazi Germany.

As the formation of B-17's roared over an airdrome somewhere in the USSR, the leader broke away, circled and came in on the mile-long runway. The other planes swung around to land and the bomber on the strip taxied behind a shepherding jeep to a dispersal point. There, Lt. General Ira C. Eaker, commanding general of the Mediterranean Allied Air Force, stepped from the Fortress and walked toward the control tower amid the cheers of men of two allies.

Taking off from Italy a few hours earlier, the B-17's had attacked the Nazi marshalling yards at Debrecen, Hungary. Now, far across the Continent, they were methodically descending on a new base for AAF operations in the USSR.

It was an historic moment. It signified the completion of a triangular shuttle bombing system by the AAF, which now was in a position to pound the enemy from three approaches. Shuttle bombing is one of the latest stages of strategic development in the air war. It is a new twist to the AAF precision attacks upon key targets by daylight.

Base facilities at all ends of the shuttle must be of the same standard in order that planes may be sent into the air as promptly from one terminal as from another. To establish new bases in a far corner of the globe required vast shipments of equipment; a constant flow of personnel and supplies; an elaborate system of communications connecting the Soviet base area, the United Kingdom, Italy and Moscow; a new type of coordinated field order; Soviet clearances and escort, and creation of a corridor for AAF planes through a front that had been so well sealed off to daylight operations from the West that even returning Red planes were in danger from their own defenses.

But despite its magnitude, the job was completed on schedule. Through its efficient shuttle system, the AAF tied together the Eastern, Western and Mediterranean fronts over the roof of Europe. By enlarging its choice of targets and routes the AAF forced the enemy to spread his defenses. The result would be more confusion for a Nazi air force already strained by its increasing commitments.

But neither AAF brains nor ingenuity could have achieved successful conclusion of the tremendous undertaking without the genuine cooperation of the Red Air Force. Personnel of the two nations were deliberately mixed down to the smallest element. The objective was to merge the specialized skills of the AAF in strategic bombing with the Soviet manpower necessary to help maintain base services. Everywhere they found they could work together perfectly. Even in the air the experiment met with great success, despite the language and a difference in flying habits.

It would be unrealistic to assume that Soviet and American military organizations meshed without some need for adjustment. Sometimes routing arrangements would meet a temporary impasse, but matters would be straightened out as soon as we saw each other's slant.—Major Albert Lepawsky, *Air Force,* August, 1944. Condensed.

History Repeats—With Variations

The recapture of Guam from the Japanese last month, after intensive aerial and naval bombardments and a relatively short but bloody and hard-fought campaign, was in marked contrast to the first capture of Guam from Spain in 1898. At that time the U. S. S. *Charleston,* convoying six troop ships to the Philippines, entered the harbor of Guam and opened fire on old Fort Santa Cruz (which had actually been abandoned some years earlier) with three-pounders. After firing twelve rounds without drawing any return fire, Commander Henry Glass gave the order to cease firing. Soon a Spanish officer came out to the *Charleston* and apologized to Glass for not returning the "salute." Glass had to tell him that it was no salute but a hostile act, since the United States and Spain were at war. The Spaniard was taken prisoner, but was immediately paroled and sent to the Spanish governor to notify him of the existence of a state of war and demand the surrender of the island. When the governor delayed, a landing force of Marines and Army infantry was prepared to make a landing and enforce Glass' demand; but after some hesitation the governor ordered the Spanish troops to surrender, and Guam was taken without bloodshed.—Capt. Clifford P. Morehouse.

Lumber for Landings

One of the "must" items when supplies start pouring ashore on a newly won beachhead is lumber. Two-by-fours have a top priority rating, and often go ashore ahead of other vitally needed goods. *By Sgt. Oscar Otis*

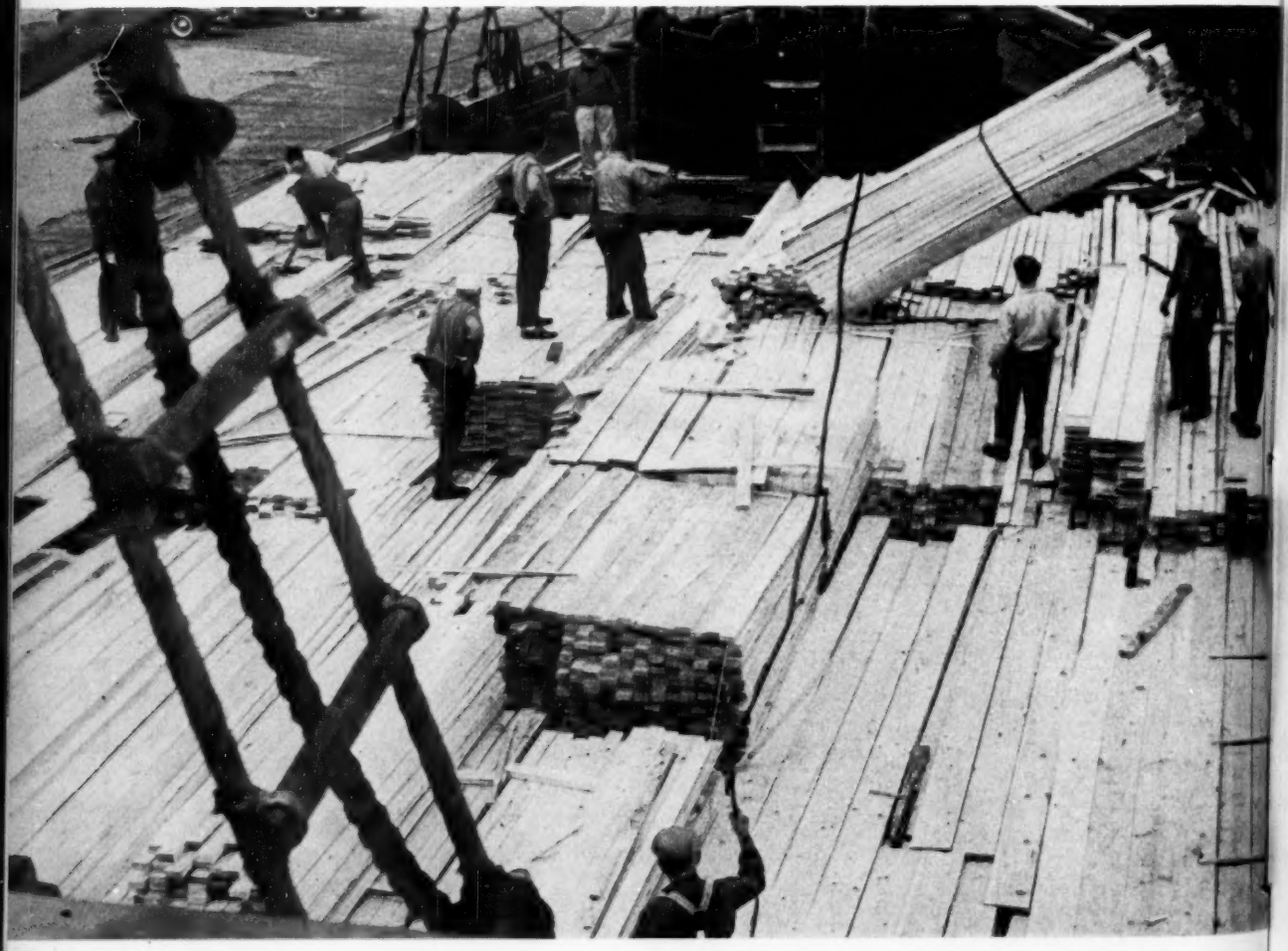
MARINE assault troops have landed on a Japanese island in the Pacific. A small beachhead has been carved out, and vital supplies start pouring ashore soon after the inland push begins.

Among these "must" items is lumber. Old fashioned two-by-fours have a priority rating right alongside guns, ammunition, and food. In fact, a quantity of lumber usually precedes the bulk of the ammunition and other stores moved to the beach to back up the assault.

Lumber has been found vital for the clockwork success of an amphibious invasion force. In early Pacific landings, it was found that supplies stacked on the beaches would sink as much as two or three feet into the coral sand. Considerable portions were ruined.

Newest landing technique calls for construction of a plank platform on the beach, and the weight of supplies is distributed evenly over this floor, making possible 100 per cent utilization of stores. This lumber is not wasted. When need for a temporary dock has abated, the boards are used to build barracks and huts. Soon after the beachhead has been established, sanitary officers demand that cook houses and latrines be enclosed, and other lumber is landed along with heavy stores for

Lumber is quickly unloaded from a Pacific Northwest boat on its arrival at the Islais Creek yard. Here it is cut to specified lengths, reshipped to battle areas.



construction purposes. While much native lumber is being cut on jungled islands held by U.S. forces, most of that used for initial landings against the enemy must be shipped from the States.

One remarkable feat of the overseas operation is ability of the yard to ship an exact footage of lumber, cut to measure, to set up a complete camp for any Marine unit, be it a platoon or a division.

Indeed, not many months ago there sailed from San Francisco a consignment of lumber, along with other Marine materiel, a complete setup for two island still to be captured.

These lumber shipments are coordinated with proportionate amounts of nails, screws, spikes, and other gear necessary for complete construction. When the lumber is landed on the specified island, only a carpenter and a hammer are required to set up the buildings. The camp is, in effect, prefabricated.

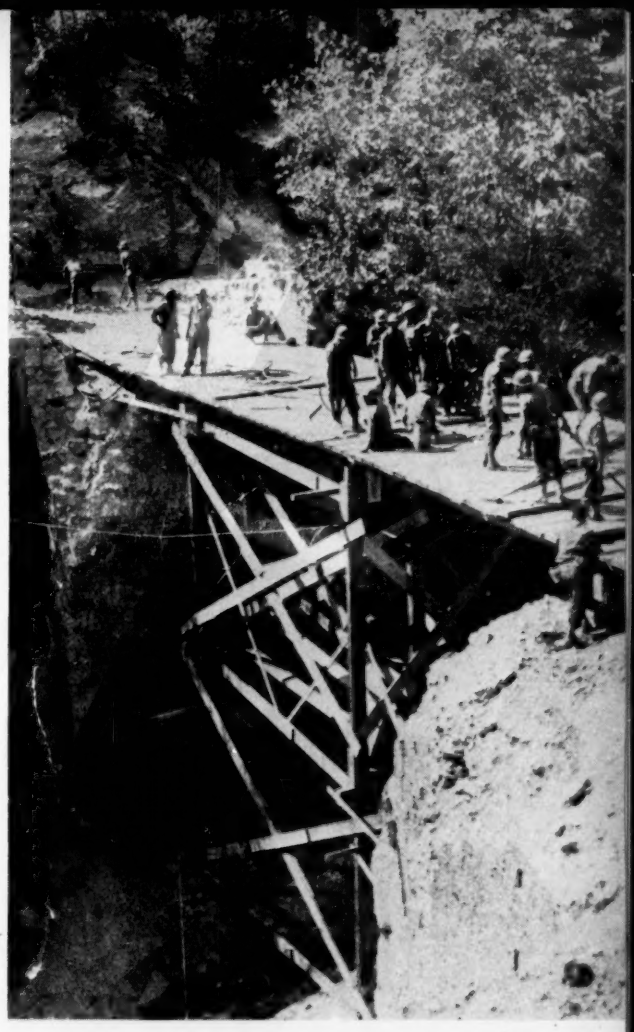
These camps, incidentally, are complete. There is lumber for barracks, mess halls, latrines, hospitals, command posts, supply depots, recreation halls. From another division of the Depot of Supplies come the furnishings, but that is a story in itself.

Lumber is also a necessity in getting supplies, especially heavy equipment, and rolling stock, to the Marine fighting fronts. Such supplies must be secured safely aboard ship with bracing and platforms. The vast number of crates and boxes needed for overseas shipments are provided by a Marine box factory and woodworking shop located on the outskirts of San Francisco at Bayshore.

One item constructed in entirety at the Islais Creek yard is the pallat or frame for speedy loading and unloading of materiel from shore to ship and ship to shore. This phase of construction is contracted to a civilian concern, but assembly is under Marine inspection. Another finished product is the pontoon bridge, and an enormous stack of pontoon parts occupies one section of the yard. These are all prefabricated at the mills and come to Islais Creek for classification and shipment overseas.

The yard, with a deep water terminal for lumber boats and other vessels at its north boundary, covers approximately six acres. It has ample storage space for 20 million board feet at a time, although lumber has never stayed in the yard long enough for capacity to be reached. Equipment is modern and sufficient. Rail facilities include a siding for fifteen cars. Deep water frontage facilitates easy loading to all types of ships outward bound.

That lumber plays such a vital part in the Marine Corps may come as a surprise even to old line Marines. Scope of the yard's operations would amaze civilians who tend to think of Marines solely as fighting men on some far-away beachhead, not realizing the extent of planning necessary to keep them supplied with fighting needs.



Engineers must have lumber at any time to build bridges, dressing stations, barracks.

The Islais Creek lumber yard was born of wartime necessity. It was originally a civilian yard but was acquired by the Marine Corps and expanded into a model that is the envy of civilian businesses. Movement of lumber through the yard is so planned that not a foot of motion is wasted nor a second lost through disorderly arrangement. The yard originally was under authority of the Utilities Division of the Depot of Supplies, an all-embracing division for the odds and ends of supply not covered by such clearly defined functions as ordnance and signal supply. A few months ago it was transferred to Engineering because this division had need for and was using ninety per cent of the lumber processed.

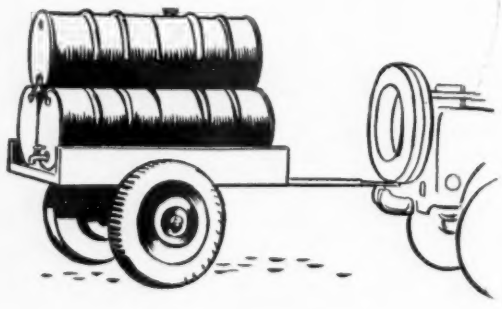
In the words of Brigadier General Arnold W. Jacobsen, depot quartermaster, lumber is one of the "five critical and vital materials" needed to conduct a successful amphibious operation and further consolidate and secure large areas in the Pacific area. When victory comes, a "well done" will be in order for the Islais Creek yard and its personnel, both military and civilian. END

Empty Gas Drums Stay at War

The steel drum has only started its cycle of usefulness when it arrives at the fighting front. Here are several practical uses to which the container has been put. *By Capt. John H. Papurca*

SUPPLY has been the greatest problem of every war fought from time immemorial. Because of this, very few luxuries and not all the necessities required to carry on a war can be brought to our fighting men in the field. To make up for the lack of some supplies our men have gone to work with real Yankee ingenuity, utilizing what is on hand.

Remarkable in this respect is the ability of our men to convert the empty fifty-five gallon gas



drums into serviceable equipment. The utility of this container has only begun after it is drained of its contents; its further uses can be put into an endless list of items.

Throughout the Pacific area the empty drum has been made into many interesting devices and in one case in particular solved a problem in a camp area on a South Pacific island. A group of weary Marines debarked from trucks at their new camp site. Their faces were red with tropical sunburn and their dungarees soaked with sweat. They had worked in shifts for two and a half days unloading supplies from the ships that brought them to the island. Now, they were ready for a bath of one kind or another, but were bitterly disappointed to learn that they must walk two miles to the nearest river which supplied all the water used in the newly constructed camp.

It was quite obvious that water procurement was the main problem of the camp. All water for cooking, drinking, and bathing had to be hauled from the river, and the demand was greater than the means for transporting it. The water cans and one water trailer per battalion were not enough.

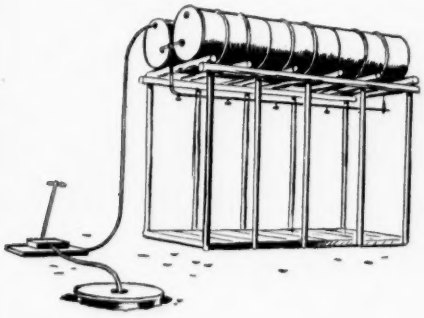
To the rescue came the inventive minds of some marines, the versatility of a few sea-bees, and some empty gas drums. The first use of the empty barrels was revetting water wells so badly needed by the camp. This was accomplished by cutting out the ends of the drums and placing them end to end in the wells to the required depth, thus preventing the sides from caving in and keeping the water clean for use. Although the well water was good for washing clothes and bathing, it was not suitable for drinking or cooking. So the problem of water transportation still existed inasmuch as the number of water cans and trailers had not increased.

The solution to this problem was soon forthcoming. An active mind devised a water trailer from six empty drums. One end was cut out of each drum and the two open ends welded together. This gave three one hundred gallon drums which were then banded together to form a clover leaf or pyramidal arrangement. The three large drums were connected by pipe and a water tap inserted in one of the lower barrels. All the welding was done by a member of those famous working battalions, the sea-bees, who will and can do anything, anywhere. The three drums

were placed on a small trailer making an efficient three hundred gallon water trailer. Soon others in the camp copied this design and before the week was over several were in use.

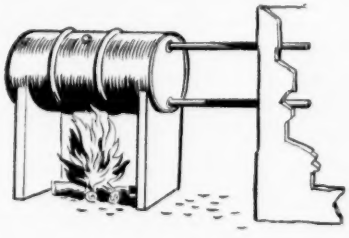
Because of the disappointment of the men on their arrival at camp and the inconvenience of washing by bucketing water from the well or going to the river which was two miles away, a shower was designed and erected in our company area. Using the principle of the newly made water trailer, six gas drums were welded together and then elevated to a sturdy platform made of

tree trunks. The sea-bees fabricated shower heads from ordinary water pipe and let us use a hand operated water pump that carried the water from a gas drum revetted well to the storage tanks,



which were made of drums, on the elevated platform. The drums being above the height of a man's head allowed ample pressure for a spray. The general rule of twenty "licks" on the pump before taking a shower kept the drums filled. The shower was always in use when the men were not working. Soon there were a number of similar devices throughout the camp area.

Many other uses appeared for the empty gas drum, especially around the galleys. A popular one was to make mess gear sterilization tubs from them. I noticed several designs of this particular use. Wash tubs and garbage or trash receptacles made from drums were seen everywhere. Empty drum incinerators were used by every unit.



The drums also made excellent culverts for water drainage under roads, and permanent ditch revetments along the sides of roads. A field hospital area had a drainage system completely revetted by gas drums. In this case each drum was split in two after the ends were cut out. The half drums were laid end to end in the drainage ditches making a desirable drainage system for the frequent rains.

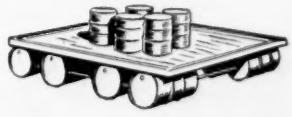
At one camp the seating arrangement for the movie area was row after row of empty drums.

In a sea-bee camp a drum was fashioned into a unique hot water tank using the same principle as that for a regular hot water tank. The drum was set into the top of a concrete incinerator which heated the water. A regular piping system carried the hot water into the galley.

Often drums are split and flattened out to make large pieces of sheet metal which have many uses. In Samoa the covering for an entire building was made in this manner.

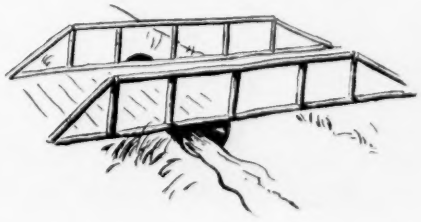
When filled with sand and placed in a circular arrangement, gas drums make fine emplacements for all types of guns. One such as this was used for a 90-mm anti-aircraft gun emplacement.

Other uses include air tight drums which act as pontoons for rafts, bridges, buoys, and floating targets. A bomber unit anchored a number of drums in a circle out on a reef and used it as a target in dive bombing. Empty drums have also been used as targets on ridges or places where the result of firing was to be observed.



I have seen weapons from machineguns to mortars fire on such targets. On one occasion I was greatly impressed by a mortar platoon which dropped a shell on an empty gas drum at twelve hundred yards. When the smoke cleared not a trace of the drum could be seen.

Included in the endless list of uses are foundations for huts, wharfs, bulkheads, and docks. Drums have been made into stoves, used in the construction of heads, and for roofing when flattened out. Even the ends of the drums have uses as a by-product of the drum itself. The most common one is as a plaque or sign board for directions, instructions, and other information.



These are only a few of the uses of the empty gas drum which plays a big part in all theaters of war. Most of the drums are shipped back to the United States to be used again for what they were originally intended. Those that do not return find places in the battle areas. END

Moving Earth At Eniwetok

The important, sometimes spectacular operations of U. S. military engineers in this war are outlined on page 35. This striking photo of bulldozers leveling sand on Eniwetok further suggests their vital role.

"FOR YOUR INFORMATION"

Digest of Announcements from Official Sources

Hospitalization for Dependents

In compliance with the provisions of Public Law 51, the Navy Department has defined "rates for hospitalization and medical care of dependents of naval personnel and others" and has issued instructions governing hospitalization of dependents of naval personnel.

Dependent is defined as a lawful wife, unmarried dependent child under twenty-one years of age, and mother and father of a member of the Navy or Marine Corps if such parents are dependent. "Child" includes a natural or adopted child or stepchild. Widows of deceased naval and Marine Corps personnel shall be entitled to hospital care in the same manner as dependents.

Commanding officers of hospitals, approved for the purpose by the Surgeon General, will determine availability of accommodations and need for hospitalization. "Availability" must mean suitable accommodations and facilities in excess of present or prospective needs for naval personnel and other patients whose hospitalization is authorized by law.

Dependents will be admitted only for acute medical and surgical conditions, exclusive of nervous, mental, or contagious diseases or those requiring domiciliary care.

Five classes of dependents are eligible for hospitalization under the instructions. They are (a) dependents of personnel of the regular Navy and Marine Corps on the active list, (b) dependents of retired personnel of the regular Navy and Marine Corps on the active list, (c) dependents of reserve personnel performing active duty other than training duty, (d) dependents of retired personnel of the regular Navy and Marine Corps not on active duty; widows of personnel of the regular Navy and Marine Corps; widow of any member of the reserve forces who dies while on active duty which is permanent in character; and widow of any member of the reserve forces who dies while on active duty during war or national emergency, (e) dependents of enlisted personnel transferred to the Fleet Reserve after 16 or 20 years' naval service, not on active duty, including widows of such personnel.

Payment for hospitalization shall be made by the officer, enlisted person, or agent on whom the patient is dependent prior to discharge of patient from the hospital, at the end of each week, or at the end of each semi-monthly or monthly period as the Commanding Officer may direct. The Commanding Officer may require an advance deposit of a sum sufficient to cover the probable number of days hospitalization.

Reimbursement of the involved appropriation shall be made to the Disbursing Officer at the rate of $1.75 per diem at Naval Hospitals and dispensaries.

Personnel and dependents other than Navy are provided for with both out-patient and in-patient care outside the continental limits of the United States or where activities are in isolated locality or where civilian hospital facilities are inadequate or unavailable—Letter of Instruction No. 794.

Signal Equipment Failure Report

Failure of all signal equipment used by the Marine Corps, except that furnished to aviation units by the Bureau of Aeronautics, shall be reported on the new Marine Corps "Signal Equipment Failure Report" in the future. No other failure report need be submitted.

Supply of a replacement part for the defective item does not automatically follow submission of the failure report. Replacement for the defective item should be requisitioned by the organization which effects repair from the next higher echelon of signal supply.

Failure of signal equipment furnished to Marine Corps aviation units by the Bureau of Aeronautics shall be reported in accordance with instructions issued by that Bureau.—Letter of Instruction No. 794.

Clothing for Navy Personnel

In the future, issue of clothing to Navy enlisted personnel will be made in the same manner as are issues to Marine Corps enlisted men and should be recorded on a Form 631 and inserted in the service record book of the Navy enlisted man.

It should be understood that issue of clothing to Navy enlisted personnel is to be made only to Navy enlisted men serving with, and a part of, the Fleet Marine Force organization.

Upon separation of the Navy enlisted man from Marine Corps duty the serviceable outer clothing with the exception of shoes in his possession should be recovered, as it will no longer be required by him upon assignment to naval activity.

In the event proper Navy clothing is not available, the man may be permitted to retain his Marine Corps clothing until his Navy uniform is available.—Letter of Instruction No. 802.

Tax Relief

Relief for Marines from double taxation by State and local agencies has been provided by Congress by amending the Soldiers' and Sailors' Civil Relief Act of 1940. Under the new amendment personal property, income, or gross income of persons in military service shall not be subject to state or local taxes by reason of temporary residence, receipt of income, gross income, temporary location of personal property, within any such state or territory.—Information Memorandum.

Change in Designation

Effective 4 July, 1944, the Procurement Branch of the Personnel Department is abolished, and the designation of the Enlisted Procurement Division is changed to Procurement Division, by direction of the Commandant.—Headquarters Memorandum.

Over 38 Discharges

In furtherance of the war effort, Headquarters will consider applications for discharge from any enlisted man over 38 years of age who is serving within the continental limits of the United States.

Commanding officers will include the following information in their forwarding endorsements:

(1) Recommendation.

(2) Statement of any special qualifications of the applicant which indicate a value to the Marine Corps, in his rank, greater than reasonably to be expected of a replacement by enlistment or promotion of a man better fitted by age for combat duty.

(3) Statement as to whether or not a suitably trained replacement is present and available for an applicant having special qualifications.—Letter of Instruction No. 792.

Servicemen's Readjustment Act

All Commanding Officers within the United States have received a copy of Section 104 and 105 of the Servicemen's Readjustment Act of 1944, Public Law 346 for compliance.

Section 104 states "No person shall be discharged or released from active duty in the armed forces until his certificate of discharge or release from active duty and final pay, or a substantial portion thereof, are ready for delivery to him or to his next of kin or legal representative; and no person shall be discharged or released from active service on account of disability until and unless he has executed a claim for compensation, pension, or hospitalization, to be filed with the Veterans' Administration, or has signed a statement that he has had explained to him the right to file such claim: provided, that this section shall not preclude immediate transfer to a veterans' facility for necessary hospital care, nor preclude the discharge of any person who refuses to sign such claim or statement; and provided further, that refusal or failure to file a claim shall be without prejudice to any right the veteran may subsequently assert. Any person entitled to a prosthetic appliance shall be entitled, in addition, to necessary fitting and training, including institutional training, in the use of such appliance, whether in a service or a Veterans' Administration hospital, or by out-patient treatment, including such service under contract."

Section 105 states "No person in the armed forces shall be required to sign a statement of any nature relating to the origin, incurrence, or aggravation of any disease or injury he may have, and any such statement against his own interest signed at any time, shall be null and void and of no force and effect."—Letter of Instruction No. 808.

Occasion of Ceremonies Defined

Interpretation of the term "occasion of ceremony" as used in Public Law 406 providing for persons who have served honorably in the Army, Navy, Marine Corps, or Coast Guard, when not in active military or naval service, being entitled to bear the official title and upon occasions of ceremony, to wear the uniform, of the highest grade held by them during their war service, has been reached by joint agreement of the Secretary of the Navy and the Secretary of War.

The term is interpreted to mean occasions essentially of a military character at which the uniform is more appropriate than civilian clothes, such as memorial services, military weddings, military funerals, military balls, military parades, and meetings or functions of associations formed for military purposes, the membership of which is composed largely of honorably discharged veterans of the services or of Reserve personnel.

Authority to wear the uniform, under the act, and under this interpretation, includes authority to wear the uniform while traveling to and from the ceremony, provided such travel in uniform can be completed on the day of the ceremony.—Headquarters Bulletin.

Approval of Public Appearances

It is directed that all officers attached to Headquarters Marine Corps who make appearances in civic and fraternal affairs give prior notification to Headquarters of the Division of Public Relations so that they in turn can notify the Public Relations Officer within the area in which the officer is to appear.—Headquarters Memorandum.

Books

Recent Offerings for Military Readers. Books reviewed may be obtained at publishers' prices from The Marine Corps Gazette.

The Story Behind D-Day

Loaded with troops, the landing boats circle at the rendezvous as the deployed warships blast away at the enemy-held beach. The big naval guns are still roaring as boats of the first wave get their bearings and head for shore.

Behind the assault waves come larger landing craft with heavy equipment and supplies. The amphibious operation moves into high gear, and every member of the complicated team has his part to play—the Shore Fire Control Party with its NGLO's (naval gunfire liaison officers), the Shore Party and all its units, the Shore Party Commander, the Beach Master, the Beach Battalion, the Hydrographic Group, the Demolition Group, the boat repair section, the service platoons, the communications team, the beach medical unit, military police to direct beach traffic. This is a new type of warfare, the only way in which our enemies can be defeated.

Back of the magnificently organized assault on France were years of planning and development in amphibious technique. Part of that story is told by Lieutenant Earl Burton, USNR, in a new book, *By Sea and By Land.** More of the story remains to be told, but this is one of the first clear expositions of all the details which go into the making of amphibious war. It is written principally from experience with the Atlantic Fleet Amphibious Force.

First joint amphibious maneuvers by combined Army, Navy and Marine forces were held early in 1941. In command of those operations was Major General Holland M. Smith of the Marine Corps. Not until March 14, 1942, was the Atlantic Fleet Amphibious Force activated, with one ship and a staff of eight officers. In July of the same year, after plans were under way for invasion of North Africa, a shift in the general war strategy took the Marines to the West Coast to form the Pacific Fleet Amphibious Force. Only Army and Navy components were left for operations in the Atlantic Theater.

At that time, all amphibious plans were highly secret, and it was not until late in 1943 that newspaper correspondents were allowed to visit and write about amphibious training bases. There was much to be done—administration had to be planned, training had to be mapped out and perfected, and the weapons of amphibious warfare had to be developed. Lt. Burton tells how the job was done.

While much of the book will not be new to anyone who has taken part in an amphibious operation, it will help many readers, both military and civilian, to understand what is back of the D-Days and why none of our assaults has failed.—W. S.M.

* *By Sea and By Land*, the story of our amphibious forces. By Lieutenant Earl Burton, USNR. New York: Whittlesey House. 218 pp. $2.75.

Beauty in the Jungle

After reading so much about the South Pacific area and its hot and humid jungles, usually described as the reception room to hell, it's refreshing to come across a book, *The Pacific World**, that presents the area from the point of view of the scientist. Instead of being satan's playground, the Pacific jungle is presented as a place of beauty that is a joy to behold. To be sure, there is a little malaria here and there, a fair share of poisonous snakes and insects, poison plants galore, and occasional head hunters, but they are all part of nature and nature is beautiful if you just understand it.

The area discussed in this volume includes the Aleutians on the north, Hawaii on the East, New Zealand and Australia on the South and the Dutch East Indies on the West. Japan comes in for a chapter as do the Philippines.

Written in primer fashion, this book does a good job on the ABC's, presenting the basic facts of geology and geography, history, zoology and botany in capsule form. You learn what makes the winds blow, the ocean currents flow and that it's the moon that causes the tides to run. You get a short refresher on the great explorers.

While we can't quarrel with the lofty idealism of the authors in asking men going into the Pacific theatre to help in the conservation of wildlife, to help science by cataloging information and sending it in to scientific institutions, we can't quite picture a Marine stopping on the beach to pick up a seashell to send back to the American Museum of Natural History.

From the introduction by William Beebe, to the final chapter, there's scarcely a mention of the fact that there's a war going on in the Pacific. There's very little attention given to the import-

* *The Pacific World*. Edited by Fairfield Osborn. Published by W. W. Norton & Co. Inc., New York. Price $3.00. 218 pp. Illustrated with maps and charts.

ance of the Pacific area in anything except scientific terms. By examining each of the island groups separately we somehow get the idea that we've been looking at a checkerboard that is not glued together and we get no conception of the area as a whole.

Although the authors have directed their work at the serviceman going out into the Pacific we think it will be of little value save to those who may be stationed on some well secured island where butterfly nets have replaced camouflage nets. However, men stationed in areas where they have the opportunity of doing so, might well heed the request of the authors to send in specimens of plant and animal life to scientific institutions in the U. S.

Tokyo From Inside

"A primary axiom in war is to know your enemy", writes the former ambassador to Japan, Joseph C. Grew, in his foreword to *Traveler From Tokyo.** Author John Morris, an Englishman who spent four years in Tokyo immediately preceding and following Pearl Harbor, seeks to enlighten us about the nature and character of the Japanese people.

His book, written unpretentiously and without passion, is a combination of his personal experiences as a professor of English literature in a Nipponese university and as an employe of the Japanese foreign office, and his objective observation of the people. Because of his connections, he was not interned when war came but was allowed to remain at large under parole. In these circumstances he had the unique opportunity of observing how the residents of Tokyo reacted to the war, even when it was brought home to them by Doolittle's raid.

With more and better bombings of the Japanese homeland in the offing, his comments on the Jap reaction to the first bombing are of interest: although the American bombers came in so low that their distinguishing marks were clearly visible, he reports, there was not the slightest sign of panic in the population. "The police halted traffic, but nobody made any attempt to take shelter; the general sentiment was one of bewildered interest, everybody wondering what would happen next."

He reports that shortly after this raid machine-gun posts were established on a number of buildings in Tokyo and barrage balloons made their first appearance over the city, although he never saw more than six in the air at the same time.

Unlike the Germans, the author points out, the Japs will never give in. "They will go on lowering their standard of living, if necessary, until the daily ration is barely sufficient to support life, but the people will not crack. It is only by complete destruction of their men and their resources that they can be defeated . . ."

"It is of the utmost importance," he adds, "for the war to be brought home to the people of Japan themselves. They know so little of what is happening in the world today that only when the war is actually brought to their homeland itself will they realize they are beaten. Nothing less than an occupation of the country will be necessary."

For dealing with postwar Japan, he outlines a program: defeat, occupation, demilitarization and opportunity.

"The period of occupation," he suggests, "should be made to depend upon the ability of the Japanese to produce a new form of government; a government with liberal ideas that is willing and anxious to cooperate with the Allied Nations. I believe that the nucleus of such a government already exists in Japan. The country has always possessed liberal-minded statesmen in sufficient quantity. But these men, at the present time, dare not voice their feelings . . . the chief task of the army of occupation would be to ensure that the new government is afforded protection and help while it is reorganizing the administration of the country."

Many readers may not agree with the author's picture of the Emperor as a helpless tool in the hands of the military, and his suggestion for collaboration with him. He says: "Any attempt to discredit the Emperor would, in my opinion, be disastrous. What we must do is convince the Japanese people that their Emperor has been led astray by his military advisers. If this could be successfully accomplished it would have the effect of discrediting the army and would thus strengthen the position of the new government. The wholehearted cooperation of the Emperor would be indispensable."

There are Americans, now busy in the Pacific, who are using more direct means for discrediting the Japanese Army.—H.B.

Bible for Army Officers

The newest edition of *The Officer's Guide** brings this fine Army text up to date on such items as women in the service, combat equipment and practices, the latest trends in paper work and the like. With more general information than the World Almanac, it seems almost a must for an Army officer.

There are many chapters of interest to the Marine officer, but they are those which are more general in nature. The chapter on "Practical Public Speaking," for example, can be of value to anyone who feels the need of advice on such a subject, while the chapter on "Pay and Allowances" is gospel only for the Army.

* *Traveler From Tokyo.* By John Morris, New York: Sheridan House. 253 pp. $2.75.

* *The Officer's Guide.* New 10th edition Summer 1944. Harrisburg, Pa.: Military Service Publishing Co. $2.50.

One of the newly commissioned officer's most urgent needs is for specific information on the little niceties of uniform wear; exactly where to wear the insignia of rank on the shirt collar, the position of the ribbon bars on the blouse, etc. The Officer's Guide has it all in pictures, with vertical and horizontal dimensions shown. This information is published by the Marine Corps in *Uniform Regulations,* but the publication is as hard to secure as an original edition of the *Memories of Fanny Hill.* A *Marine Officer's Guide,* should one be compiled, ought to be a best seller.

The proofreading on the new edition is occasionally haphazard. We noticed that Lieutenant General Vandegrift's name is spelled wrong, and he is still carried as a major general. We also came across the word "nambly-pambly" in a chapter written by a major general. Webster agrees with us that "namby-pamby" is the accepted version, but proofreaders, being a namby-pamby lot, were probably afraid to correct a major general.—J.W.H.

A Mission Fails

In one sense, *Ten Years in Japan* * is the story of the failure of a mission.

When Joseph C. Grew was sent in 1932 to Tokyo as United States ambassador to Japan, his task was two-fold: to uphold American rights and to avoid war. That both were not realized, however, can hardly be attributable to Mr. Grew. Ten men with his fine diplomatic ability, working fifty times as long and as hard could not have stemmed the utter fanaticism of Japanese overlords dreaming of world conquest and of sitting in the White House dictating peace terms.

In the main, Mr. Grew's book is a valuable historical document. As *Mission to Moscow* helped us understand one of our staunch allies, so *Ten Years in Japan* aids in giving us insight into one of our deadliest enemies. Like Ambassador Davies, Mr. Grew has compounded *Ten Years in Japan* from extracts of his diary, personal and official correspondence, and dispatches to the State department. And through these we can learn why that mission never succeeded. He tells of a difficult decade of intrigue and conflict which led to the inevitable war. It is a living record which, more than most "expert analyses", gives the clearest approach to the complexities of Japanese diplomacy and thought.

Mr. Grew was a good ambassador and a good observer. There are, in this excellent book, innumerable personal anecdotes, experiences, and superb word pictures of some of the men who have figured so notably in Japan's recent history. There is humor, too, especially in the early portions of the book, in which the reactions of the Grew family to the newness and strangeness of Japan are recorded.

And there is prophecy, too. Prophecy which, in view of Mr. Grew's record of guessing right more than once, is worth more than passing attention. Months before Russia was attacked by Germany, Mr. Grew noted in his diary that such action was inevitable. Thus, his diary entry of February 28, 1942, commenting on the eventual downfall of Germany, is significant:

". . . With Germany out of the picture, the Japanese government could hardly fail to perceive the inevitable outcome, and with a view to saving her cities and avoiding the total destruction of her merchant marine . . . her capitulation might well take place after the downfall of the Axis. But we shall have to guard against a premature peace . . ."

Ten Years in Japan is, beyond all doubt, required reading for every American who hopes to be alert to the problems of war and peace.—H.S.K.

* *Ten Years in Japan, a Contemporary Record Drawn from the Diaries and Private and Official Papers of JOSEPH C. GREW. Simon and Schuster. New York. 554 pp. $3.75.*

Gas as a Weapon

The author of *Gas Warfare,** assistant chief of Army Chemical Warfare Service for materiel, states at the outset of the book that the purpose of this Fighting Forces Series book is to treat the subject authoritatively in non-technical language.

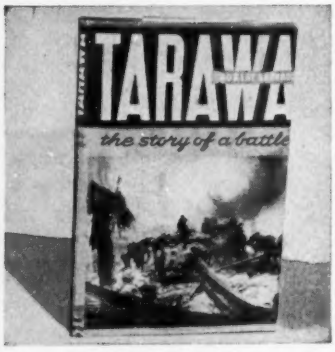
He succeeds very well. No part of the text is beyond the understanding of the average reader; yet, the book covers every important unrestricted phase of the use of smoke, flame and gas in modern war.

Many arguments are presented in favor of the use of gas as a major weapon. The main contention is that it is more nearly humane than the present method of high explosives combat. This point seems to rest on the assumption that gas battles "should" incapacitate casualties without killing them, and the incapacity should not be permanent.

However, after learning of the lethal qualities of gases described in the ensuing pages, and recalling that details of the newest and most potent gas developments are said to be military secrets, some readers may wonder just where incapacitation would end and loss of life begin in the event of a full-scale gas duel.

General Waitt goes well beyond the standard listing of the "basic" gasses according to their properties, physiological effects, etc. He discusses screening smokes, ground and air chemical weapons, individual and tactical protection, first aid, types of gas-masks, clothing, and gas-proof shelters.

* *Gas Warfare. By Brigadier General Alden H. Waitt. The Infantry Journal, Washington, D.C. 221 pp. $.25.*



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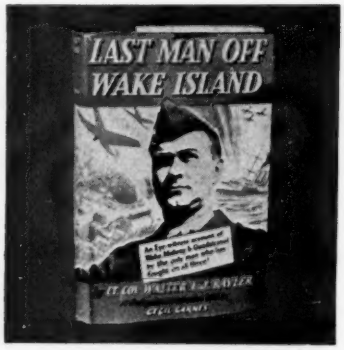

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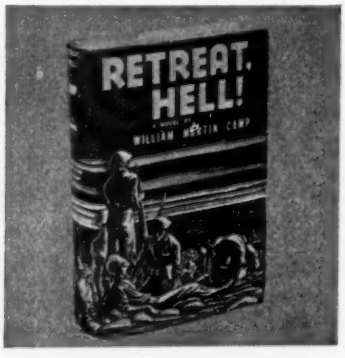

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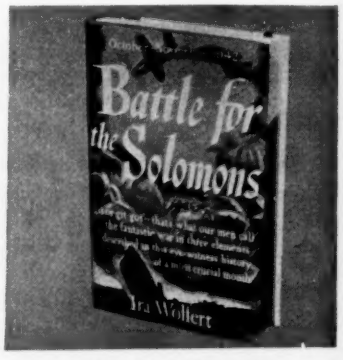

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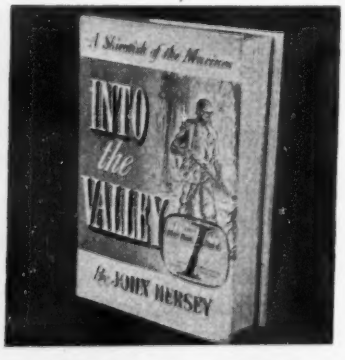

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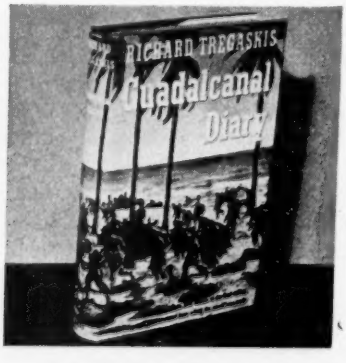
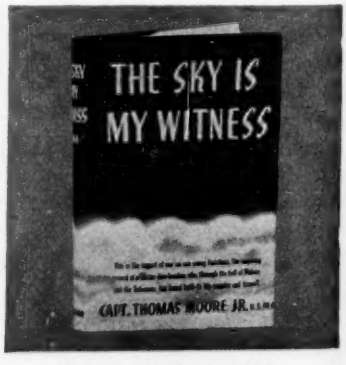


GUADALCANAL DIARY

Millions have heard of this book and thousands have read it. Richard Tregaskis, who was with the Leathernecks in the Solomons, is the author of this 263-page volume. Special edition $1.00.



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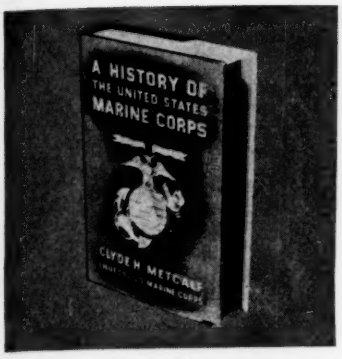

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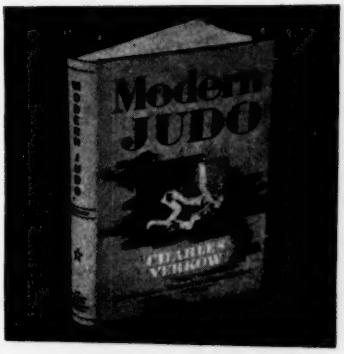

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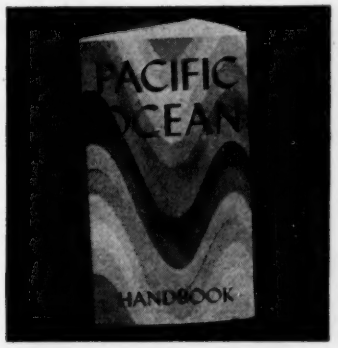

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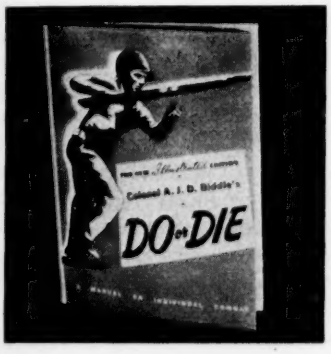

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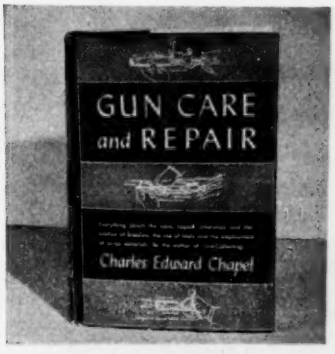

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Military Digest

A Review of Current Military Thought

The Strategical Situation in China

China north of the Yellow River, but excluding Mongolia, has an area of about 600,000 square miles, and an estimated population of 120 million. This land is rich, raises wheat and millet, and has much beef and mutton. This part of China has been in contact with the Japanese to a greater extent, and for a longer time, than the south. The people dislike the Japanese, but have learned to work with them when necessary.

China south of the Yellow River has an area of about one million square miles, and a population estimated at 280 million. It is also rich country. Social habits and economic conditions differ greatly from north China. South China bitterly hates the Japanese.

Since the beginning of this century, China has come to hate the Japanese intensely and the Japanese reciprocate. The result has been a most savage and brutal war, which since 1936 has devastated China, more particularly that part south of the Yellow River.

North China has not suffered so much. Economic conditions are better there. The coming of the Japanese did not, to the same extent, destroy the slender balance of life common to the country. The inhabitants adjusted themselves to the new rule under less fighting.

Japan has not attempted to conquer all of China. She has occupied about three per cent of its area. This, however, includes key cities, the ports, the railroad terminals, and a few important sections. Since 1939 Japan has not tried to enlarge her holdings. She doesn't have to. With the vital economic centers securely in her possession, Japan is in a position to strangle China economically, and is actively doing it.

Commerce flows normally over a few railroads, along the rivers and canals, and through the ports. The Japanese hold most of the important centers of communication. Unless it pass through Japanese-held emporiums, food can not be shipped to where it is needed, nor cotton from fields to mills, nor ore from mines to furnaces, nor many of the other materials which China could produce in abundance to where they can be processed.

At this date, the 97 per cent of China which is unoccupied and apparently free is either crumbling through lack of food and supplies or has had to submit humbly to Japanese-controlled rule.

When Japan attacked China, much machinery was moved from the coast areas deep into the interior. It was there set up and put to work. Years have passed. Now the machinery is worn. There is no way to get spare parts or new machinery, so prices are going up to astounding figures for the little that remains.

British and American planes fly some supplies, mostly war material, into China by the India to Chungking air route. Only a small quantity of commercial goods can be forwarded, much too little for what is needed for just elementary uses.

When the machinery was moved, 40 million refugees went with it. To feed this mass of homeless in a country which never had any large excess of food supplies has been a difficult problem.

Strange as it may seem, Japan regularly sells supplies to unoccupied China. Japanese goods are for sale at Chungking. Naturally, none are useful for war purposes. They include food, cotton, and other necessities. The Japanese restrict quantities so as to assure continuing dependence upon themselves. In return Japan receives tung oil, wolfram, and articles which are useful to her, and collects her commission on Chinese-produced articles which pass through Japanese-occupied centers en route from one province to another.

This commerce between China and her enemy is run by a species of black market, perfectly known to, and completely controlled by, the Japanese authorities. As the Chinese factories which were moved into the interior at the commencement of the war wear out or fail to manufacture due to lack of raw material, the Chinese economy becomes increasingly dependent upon Japan.

In some provinces starvation is present. Epidemics are rampant. Infant mortality is terrific. So far as fighting is concerned, it is nominal only.

Chinese troops, properly trained and fed, can fight well. The American-trained divisions in Burma have justified themselves. The underfed troops in China are more concerned with the problem of living than with the enemy who in most cases is distant. In the greater part of unoccupied China, due to lack of food, supplies, and transportation it is impossible to assemble an expedition large enough to threaten Japanese interests.

Inflation is mounting in unoccupied China. As the local factories close down, goods are scarcer. As compared with 1937, prices at the beginning of 1944 had increased two to five fold for ordinary articles, and the end is not in sight.

In occupied China, Japan is opening industrial establishments. Iron and steel plants are in production in the Peiping and Hankow areas. Japan fully expects her own industrial centers to be

eventually bombed by the Americans. For two years she has been preparing for this probability by duplicating existing plants or by transferring plants from Japan to well scattered places in north China, Manchukuo, and Korea. These are centers of work and food for Chinese.

Japan has made no attempt to colonize China. The Chinese accept wages so low that the Japanese can not compete with them in an open market.

Three Chinese governments, all military and all of the dictatorial type, function in China.

The strongest, and the one controlling the larger part of unoccupied China, is that of the Kuomintang Party. The leader of that party is Chiang Kai-Shek, whose headquarters are at Chungking. In official publications, Chiang as party leader is listed ahead of his office of generalissimo, or head of the State.

This Chinese government is recognized by the United Nations as the sole lawful one. The British and Americans furnish it with arms, munitions, supplies, and funds, to the extent permitted by available means. Russia for a time also furnished supplies. Criticism has sometimes appeared that China has not been receiving its fair proportion of lend-lease supplies. This may be so, but it is not due to lack of goodwill. Everything that can be sent is going forward. It is impossible to ship more under existing transportation.

The United States has also furnished the 14th Air Force, which is operating within China. It raids Japanese centers, assists struggling Chinese forces, and attacks enemy lines of communication. American training units are conducting schools for training Chinese troops.

According to Chinese accounts, the Kuomintang Army has three million troops under arms. Their estimate of the Japanese occupation strength has varied with time, but in general it is around 600,000 men. This gives the Chinese, on paper, a superiority of five to one. If such a large Chinese force could be grouped into conventional armies and properly equipped and trained, it ought to be able to evict the enemy from their country.

At this time it appears that only limited Chinese armies are in being which could be counted upon to take the field and fight alongside allied troops in an offensive compaign. Such forces will have to be completely organized, trained, supplied, and equipped.

The Kuomintang Party represents democracy. According to its own reports, in the territory held by its troops, over 99 per cent of the people do not belong to the party and have never voted for it. The leaders of the party hope that with time a democracy will arise. War, starvation and epidemics and especially the enemy, prevents concentration of efforts in organizing a democratic system now.

The mass of people are not anti-Kuomintang, and certainly not pro-Japanese. Since time immemorial China has been a dictatorially ruled country. The people must be educated to what democracy is.

The second Chinese government is Communist. It is not recognized by the United Nations. It maintains an uneasy truce with the Kuomintang Party. It is strong in northwest China. It has its own military forces. In the last two years their activity has declined. Their excuse has been that they have failed to receive their proportion of lend-lease munitions, which they allege have been appropriated exclusively by the Chungking government.

At Nanking, Japan has set up a third government, favorable to itself. Its leader is Wang Ching-wei. His government is recognized by the axis powers.

The Nanking government has an army of considerable size, equipped by the Japanese. It is growing, and is employed in Japanese occupation duties. Reports from Chungking indicate that about one half of the occupation force in China, or about 300,000 men, are Chinese under the Nanking flag. Some have been employed on offensive operations.

From time to time, but not now very often, Japan undertakes campaigns into Kuomintang China. Some are in the nature of roundups to destroy Chinese troops armed with lend-lease materiél before they become dangerous. Others are to seize or destroy supplies, particularly food.

At date of writing, military operations leading directly to China's aid are limited to efforts in north Burma to reopen the Burma Road. This would enable more supplies to be furnished the Chungking government. Chinese sources have criticized this plan as requiring too much time.

The Burma Road has been seriously damaged. It is not an all-weather road and cannot be repaired during the rainy season, which normally extends from May to November. At the best, work could not start until November, 1944, and it might take all of the following dry season to accomplish the required repairs. It would have to be closed during the ensuing wet season. It might be May, 1946 before traffic in volume could move over the road. The Chinese estimate that it would take two years to transport over the road the supplies the Chinese armies need to enable them to meet the Japanese on something like even terms. It would then be 1948.

From this rather gloomy outlook, the Chinese conclude that the rescue of their country should not depend upon the Burma Road. In fact, it will not. There are other routes leading towards China, and the allies apparently have no intention of confining their efforts to just one. Lines of operation lead southward from the Aleutian islands, westward across the central Pacific, northward from Australia or through the China sea. On all routes the allies have forces massed which are making progress. A

solemn promise has been given to come to the aid of China with every available man, ship, and gun as soon as the war in Europe is won.

There is danger that the time required for the rescue of China will be so long that she may succumb to the Japanese economic stranglehold before help arrives. This is a war risk which the allies have agreed upon as one that must be accepted. The decision which was first announced at the Casablanca Conference in January 1943, and which has since been adhered to, was that with two wars in progress it was necesary to concentrate in Europe first and in Asia next.

For the moment China has exhausted the possibilities of saving herself. She is the oldest political government in the world. History is far from repeating itself, but this long, impressive record gives hope that China will survive with the aid of her allies. When the time arrives, China should be able, with the aid that will be given her, to reestablish her independence and organize a sound governnment. By Colonel Conrad H. Lanza, *Military Revue,* July, 1944.

The China-Burma-India Theater

About one-half of the 2,000,000,000 inhabitants of the earth live in Asia; and over 80 per cent of Asia's population live in China, India, and southeastern Asia. These areas, so densely populated, are rich in agricultural products; the forest products are varied and valuable; and the mineral resources, particularly in southeastern Asia, are abundant. Manifestly there are enough manpower and war materials available there to supply about everything needed in these respects to drive the Jap invaders out. But before the manpower can be used effectively it must be organized, trained, and equipped; and the materials must, in general, be made into products suitable for war purposes.

Operations in the China-Burma-India (C.B.I.) areas are important to us because control of it is essential in our operations against Japan.

The most serious problem of all is to inspire the peoples to resist Jap domination; but that subject will not be discussed here; our purpose is to present a map of the C.B.I. Theater of Operations and describe to what extent its physical features constitute military obstacles.

The Himalaya Mountains, highest and most impassable mountains in the world, shut India off from China on the north. From the eastern extremity of these high ranges, spurs of less height extend into Burman and Southern China. Transportation routes through the Brahmaputra Valley and through the rugged terrain of Northern Burma and Southern China can be constructed (the Burma and Ledo Roads are examples) but for various reasons (physical, political, and commercial) such routes have not been developed to any extent.

Most of the larger rivers of northeastern India, Burma, Siam (Thailand), Indo-China, and Southern China have their sources in the Himalaya Mountains and in their upper reaches, flow through deep gorges, forming difficult military obstacles.

Along the middle reaches of the Irrawaddy River (around Mandalay) the rainfall is not so heavy (being less than 40 inches annually), and east of the mountain ranges of eastern Burma the annual rainfall is, in general, from 60 to 80 inches; and the climate here is not as hot and enervating as it is along the Burma coast. Furthermore, the river valleys, where there are broad bottom lands, are intensively used for agricultural purposes and the physical features do not form serious military obstacles.

In general, the climate of Burma is cool and dry during the first quarter of the year; about two months of hot weather, with little rainfall, follows; then comes the rainy season with hot, sultry atmosphere; and during the fall the rains diminish and the air grows cooler. But the climates and rainfalls of places only a few miles apart (on opposite sides of a mountain range, for example) may differ greatly and their rainy seasons may come in different months. The "monsoon" winds are the equivalent of what are known in the Atlantic as "trade winds"; they blow from a certain direction during a season; they may, or may not, bring rain. The equivalent of a West India "hurricane" is called a "typhoon" in southeastern Asia.

In view of the conditions described above it is manifest that our troops now operating in North Burma are encountering extremely difficult military obstacles; obstacles which are more difficult to overcome during summer than during any other season. Among the most important jobs for our engineers is the construction of roads and bridges of supply routes for the transportation of equipment and supplies from India, or from the Burma Coast, not only for our troops in Burma but also for the inadequately equipped Chinese troops operating in China proper.—From *Military Engineer,* June, 1944.

The 4.2-Inch Chemical Mortar

The Chemical Warfare service of the Army took the Stokes mortar after the last war and proceeded to develop it, primarily as a chemical weapon, the aim being to secure a heavy mortar that could fire a thin-walled high-capacity shell rapidly. The barrel was rifled to increase range and accuracy. To overcome the feeling that a rifled weapon could not be muzzle loaded, a soft metal ring was fastened to the base of the shell. This ring expands on explosion of the propelling charge and engages the rifling. The 4.2 mortar consists of three parts—barrel, baseplate and standard. Total weight is 294 pounds, 91 pounds being barrel, 150

baseplate and 53 standard. Jeeps and carts provide best transportation. It can be emplaced and fired quickly—in ditches, ravines, deep draws or behind buildings, because of its high angle of fire. The silhouette is low, so it is easy to secure necessary defilade to hide it. The muzzle flash demands good defilade. At the beginning of the war its range was 2,400 yards, since greatly increased by new type of propellent powder. It has a tremendous fire capacity. Trained crews can fire twenty rounds per minute for short bursts not more than two minutes. A sustained fire of five rounds per minute can be maintained for extended periods.

A weapons unit consisting of a headquarters company and four weapons companies have been formed. Each weapons company has 12 mortars. These 48 mortars can pour a staggering tonnage of shells on the enemy. In one minute, massed mortars can fire 960 rounds. At 24 pounds per shell, this means 24,000 pounds or 12 tons per minute. In 1940 practically all of these weapons in the U. S. were sent to Britain where it was quickly recognized as a valuable weapon. They found the mortar closed the gap between the maximum range of machineguns and light infantry mortars and the minimum range of light field guns. Today this weapon is an organic part of the British infantry division. Its success in battle is unqualified. The troops call it the "goon gun;" the enemy calls it the "automatic mortar."—From *Military Review,* August, 1944.

Precautions Against Snakes

Fear of snakes is out of all proportion to the dangers. Common sense dictates respect for the poisonous varieties, but cases of poisonous snake bite are relatively rare. Of the 2,400 kinds of snakes in the world, only 200 are dangerous. Only in Australia do the poisonous kinds outnumber the harmless ones. Areas entirely free of poisonous land snakes include Madagascar, New Zealand, the Polynesian Islands, Cuba, Jamaica, Haiti, Puerto Rico, the Azores, the Canary and Cape Verde Islands, and Hawaii.

Snakes cannot stand extremes of heat or cold. In temperate regions they are active during the warmer months but hibernate or become inactive in cold weather. In desert regions they lie in shade during the heat of the day.

Most poisonous snakes are timid and will avoid you if given the chance. The majority of bites are by snakes suddenly surprised or stepped on. Snakes with few exceptions move slowly, though many can strike very rapidly. They cannot outrun a man, and only a few can leap entirely off the ground or strike as far as their own length. A sharp blow with a stick will break the back of any of the average sized snakes.

If you take a few normal precautions you can forget about fear of snakes. General rules are:

1. Keep alert, particularly when climbing steep, rocky slopes.
2. Never tease or pick up a strange snake in a strange country.
3. Protect vulnerable parts of your body, particularly the feet and legs. Even light clothing is protection against many varieties of snakes.
4. Many snakes roam at night; cut down on night travel when in snake country.
5. Learn the distribution and habits of poisonous snakes in any area to which you may be assigned.

Poisonous long-fanged snakes include the true vipers and the pit vipers. Most of them are thick-bodied with a flattened head. Many have keeled scales that give them a dull appearance as compared with the satiny smooth-scaled snakes. The pit vipers include all the dangerous poisonous snakes of North America except the coral snake. They inhabit both hemispheres, but the most numerous and largest species are in the New World. All have a deep pit between the eyes and nostril, but it is not easy to see features even at close range.

This family includes the various species of rattlesnake, all dangerous and all confined to the New World. The water moccasin is semi-aquatic, inhabiting sluggish waters of the southern United States. The copperhead is common in the eastern United States. Other pit vipers are the bushmasters of central and tropical South America; the arboreal palm vipers of Mexico, Central and South America (which frequently inhabit low trees, bushes, palm and banana trees) and the bamboo snakes of Asia.

True vipers are thick-bodied snakes found only in the Old World; in Europe, India, and in Africa. Well known kinds include the Russel's viper of India, the puff adder of dry areas of Africa and Arabia, and the gaboon viper and cape viper of tropical Africa.

The elapine snakes (including the cobras, kraits, and American coral snakes) are among the most deadly poisonous snakes, but even light clothing is a fairly good protection against them because of their short fangs. They comprise the majority of snakes in Australia and many species are found in India, Malaya, Africa, and New Guinea.

There are ten or more species of cobras, all confined to the Old World and all more or less able to spread the neck to form a "hood." The king cobra is the largest of all poisonous snakes. The Australian blacksnake, the tiger snake, and the death adder are among the most deadly and abundant of Australian elapine snakes. Coral snakes are small, brilliantly colored snakes confined to the New Word.

Boas and pythons are not poisonous, are slow moving and rarely attack men unless molested.

They are dangerous if disturbed because of their sharp teeth and power of constriction. The large species live only in dense jungle in Burma, Indo-China, South America, and Central and Southern Africa. Species such as the regal python and anaconda average between 17 and 22 feet in length.

There are only two poisonous lizards in the world, the gila monster of the American southwest and the beaded lizard of Mexico and Central America. Both are found only in desert areas. They are so sluggish and their mechanism for injecting poison is so poor that lizard bite is extremely rare.

Quick and intelligent treatment is the most important factor in reducing the danger from snake bite.

1. Make a lengthwise cut through each fang puncture as deep as the puncture. Make additional shallow cuts near the wound to drain it. Cut parallel to blood vessels and tendons. Prompt incisions will reduce a deadly to a non-deadly dose.
2. Squeeze out the blood and venom and suck it out if your mouth and lips are free from cuts. It won't hurt you unless it gets into the blood stream through a cut.
3. If a limb has been bitten, place a tourniquet between the wound and the heart. Loosen the tourniquet briefly every 20 minutes.
4. Keep quiet. Exercise increases the speed of spreading of the venom. Avoid all stimulants.
5. Cooling with a wet cloth or ice will delay the absorption of poison.
6. Kill the snake for identification if there is any chance of getting serum.
7. Don't cauterize the wound. The burning action does more harm than good.

—Condensed from *How to Survive on Land and Sea* (U. S. Naval Institute textbook) in *Naval Aviation News,* August 1, 1944.

The German Goliath and B4 Tanks

Two German "secret weapons," the Goliath (*Minenhund*) and the German radio-controlled B4 tank, which were put into use in the Italian theater, were both stopped by artillery or mines before reaching our forward positions.

The Goliath, nicknamed the "doodle bug" by American soldiers, is a demolition-carrying, tracked vehicle which looks like a miniature tank. In Italy the Goliaths got stuck in the mud and on hills, and sometimes exploded before reaching our lines, wounding German troops. The Goliath was also vulnerable to small-arms fire. Neither radio nor cable control made it effective.

The Goliath was first committed against our positions on the Anzio beachhead in February. Fourteen were knocked out by artillery, and none reached our positions.

The Goliath is five feet four inches long, two feet ten and a half inches wide, and one foot eight inches high. Two electric motors (earlier models had gasoline engines) move the midget at four to six miles an hour. The track is of light steel, with a 4-bogie suspension and a front driving sprocket. It has .31 inch of armor.

The motors are mounted one on each side and each drives one track. Directly behind each motor is a wet-cell storage battery which supplies the current. The motors are controlled by braking one track or the other. When the Goliath reaches its objective, the operator at the stationary control box explodes it. It cannot be moved in reverse, and is easily stopped in mud, on inclines, and in ditches or shell craters.

The length of the cable, and therefore the radius of action, is about 550 yards. The control box can be operated from a foxhole or from a tank, assault gun, or other vehicle.

The demolition compartment, built to carry 100 to 150 pounds of explosives, is somewhat forward of center and not in front as in the older model. Directly behind this compartment is a detonator compartment. A dry-cell battery in the stationary control unit is used.

B4 radio-controlled, demolition-carrying tank was stopped by a British mine and towed in by British troops near our beachhead positions in April. It weighed about four tons and carried an 800-pound demolition charge on its front sloping plate. Upon reaching its target—a roadblock, pillbox, wire entanglement—the explosive is dropped, the tank moved off, and the explosive detonated.

The B4 has a speed of nearly thirty miles an hour and runs on a seven and three quarters inch track, with five bogies, a front sprocket, and a rear idler. It has about three quarters of an inch of armor in front and sides.

The hull is divided into three main compartments for the engine, the radio equipment and a driver's compartment.

The engine compartment, in the rear half of the hull, contains a six-cylinder gasoline engine, the radiator, fan, two gas tanks, and a hydraulic mechanism for controlling the tank when it is radio-operated.

The radio equipment compartment is in the front left side of the hull. It houses a radio receiver and relays for the operation of the engine control. A small box on the left of the apparatus, which can be removed by taking out six screws, contains a five-valve superheterodyne receiver tuned to a fixed frequency, and crystal controlled. This seems to have been made easily detachable so that other receivers tuned to different frequencies may be substituted.

In addition to the radio equipment, the compartment contains the transmission which appears to have only two forward speeds and one reverse. The cover of this compartment is made of sheet metal, but has screens for ventilation. There are

two aerials, one mounted in center of the front hull plate and the other on the front part of the left fender.

The B4 is used to clear paths through barbed wire and destroy roadblocks and pillboxes. The operator drives it as far toward the target as he can. Then he switches the vehicle over to remote control and leaves by a side door. A stationary control unit, carried by the driver or in a nearby tank, assault gun or other vehicle, then directs the B4 in zigzag fashion to its objective. There the explosive is dropped and the tank is moved off to a safe distance before a time fuse sets off the demolition.

The vehicle, unlike the Goliath, is recoverable. But if there is danger of capture, the operator can set off a self-destroying device in the tank.

The driver of the B4 has a dangerous job. German soldiers call it the "death trap" or "living coffin."—By Major James H. Quello, *The Cavalry Journal,* July-August, 1944.

The Division Neuropsychiatrist

The assignment of a neuropsychiatrist to the staff of the division surgeon has been made necessary by the relatively high rate of neuropsychiatric casualties, especially in combat. It represents one of the most progressive moves yet made in military psychiatry. With the exception of induction centers and mental hygiene units in replacement training centers, psychiatric activity in the Army has been confined mostly to hospitals, with emphasis on diagnosis and disposition. In accordance with the policy of the Surgeon General, a new and more effective effort towards the development of preventive psychiatry has been placed in effect. The new division neuropsychiatrist will still have, however, an important responsibility in screening, diagnosing, and accomplishing dispositions. He will have also the opportunity to influence the placement of men to work at mutual problems with the Judge Advocate and Provost Marshal, to be an adviser in training, and to work intimately with Special Services and morale officers.

A carefully selected group of officers has been assigned to this important duty. They have had from one to three years' experience in psychiatry in the military setting. Each will be the sole representative of psychiatry in a large combat team. It is hoped that this opportunity will prove to be one of the major contributions of psychiatry in the Army of the United States.

The functions of the division psychiatrist are set forth in section V, War Department Circular 290, dated 9 November 1943. This circular outlines clearly the duties and responsibilities of the psychiatrist.

The functions of the division neuropsychiatrist listed in Circular 290 are as follows;

1. Advise in all matters pertaining to the mental health of the command.

2. Maintain a continuous screening process for the purpose of detecting and promptly eliminating individuals emotionally unfit for military service.

3. Be available for the early treatment of normal individuals who suffer from minor correctible maladjustments to Army service.

4. Assist in a program of preventive psychiatry, especially in its relationship to discipline and morale, through educational programs and informal discussions with line officers and others who may seek his advice.

5. Facilitate reclassification procedures to assure as far as practicable the proper assignment of personnel.

6. Be available as consultant to courts-martial and other boards where his services are indicated.

7. Visit division dispensaries and advise in management of psychiatric and psychosomatic problems.

8. Supervise the maintenance of proper records of neuropsychiatric conditions within the command to the end that adequate information accompanies each patient evacuated to the rear.

9. Keep constantly oriented to the changing psychiatric problems during training, pre-combat, and combat periods, with a view towards developing the mental toughness essential to combat troops.

10. Supervise the management of neuropsychiatric casualties during combat.

Division neuropsychiatrists go into their new jobs as pioneers, missionaries, educators, and salesmen. Each one can be a most important factor in the success of a division. They are expected to write a great chapter in American psychiatry.—Extracts from an article prepared in the Office of the Surgeon General and published in *The Bulletin of the U. S. Army Medical Department* March 1944. From *Military Review,* August, 1944.

Getting Out of the Jungle

Before leaving your plane, burn all papers, technical orders and trip data that might be restricted, confidential or classified. Secret instruments should be smashed and the parts buried.

Travel in the jungle forest is slow. Try to follow a stream downstream. Stick to natural trails or native trails as far as possible. Don't try to break your way through.

If you can't find a stream or native trail, follow the swampy hollows which generally run in chains and eventually join a stream.

In hilly country, the ridges are easier to follow than the valleys but precipices may make long detours necessary.

In elephant country, follow the elephant trails. Elephants never go where they are likely to fall or get bogged. You can't look through the jungle,

but sometimes you can look under it. The heavy foliage generally ends about a foot above the ground. Often you can see more by getting flat on your stomach than by standing up.

Rely on your compass and your map but don't try to follow a direct compass line. It will take too long and be too tiring.

Do your walking early in the day. By five in the afternoon very little light can penetrate. Start looking for a place to camp around three or four. Take plenty of time for sleep and rest. Don't force yourself. In picking a camp avoid the banks of streams and rivers. Pitch your tent back a few hundred feet. Try to find a slight rise. Half way up a hill is good. If jungle growth separates you from the stream, all the better..

In just about 99 cases out of 100, jungle animals will be just as frightened of you as you are of them. If you want some form of protection at night, build a fire and pile on bamboos. They will go off like gunshots and scare away any nearby animals. In an emergency, a shot from your signal pistol will scare off an angry elephant or tiger.

One of your worst enemies in the jungle is the mosquito. Never go to sleep without some sort of protection. In addition to mosquito netting, use mosquito repellant on your face and hands. Put a good quantity behind your ears.

Fish are easy to catch in most tropical streams. A hook and line will generally bring results, but a spear made by whittling sharp double points on a bamboo shaft or a small sappling will yield more food in less time. If both of these methods fail, your parachute-tent can serve as a fish net. On small streams it can be spread across a narrow portion to trap fish as they swim downstream.

Don't eat any fish that have spiny or leathery skins. Skin all fish and frogs before cooking.

Fish should always be boiled, not only as a precaution against infection but to retain more of the food and vitamin value of the fish than either frying or baking. As with fish, meat should be stewed rather than fried or baked. Chunks of meat one or two inches across should be dropped into a pot of cold water over the fire. Two minutes after the water has come to a boil remove the pot from the fire and place it to one side to cool. This permits the meat to cook thoroughly yet prevents overcooking.

If you have no cooking pots, food can be baked by wrapping it in several layers of green leaves and burying it in hot ashes, keeping the fire on top burning until cooking is completed.

A similar but cleaner method is to place a number of very hot stones in the bottom of a shallow, dry trench scooped in the ground. Cover the stones with green leaves, place the leaf-wrapped food on the leaves, surround it closely with other hot stones, and cover the whole thing with more hot stones and a light topping of earth. It will take about two hours for most foods to cook.

Fat should be part of your diet. Save unused fat from animals killed. Melt the excess fat in a pan, boil it for a few minutes, skim off any solid material, and pour it into a small can with a tight-fitting top—one or two empty friction-top coffee containers from your emergency ration kit will serve nicely. The fat then can be used for preparing starch plants and other foods.

In emergencies, two groups of jungle insects form a nourishing food source: In most clearings and grasslands termites emerge from the ground and can be picked up by the handful after a heavy rain. Remove wings and eat raw or fry in fat. They are considered delicacies by jungle natives. Grasshoppers and crickets also can be eaten. Beetle grubs are a favorite native food. They can be found by hunting out dead stumps and fallen trees and listening for the scratchings of grubs inside the wood. Once grubs are located, split the log with your jungle knife and remove them. Dried in a pan suspended over a fire, they can be eaten as they are, as part of stew made up of one of the starch root plants, or they can be fried with a little salt and fat.

Four *poisonous* plants are:

SANBOX. The tree grows tall and has a trunk covered with spines. The fruit is about four inches in diameter and resembles a small pumpkin, being green when unripe and brown when ripe.

MANZANILLO. Found near the seacoasts along beaches. The bark is smooth and tan, the leaves are green, and the fruit resembles a small green apple.

COWITCH. A plant common in thickets. The beanlike pods are not edible and should not even be touched. They are covered with short, fine detachable hairs that will cause severe irritation.

STRYCHNOS. A slender, woody vine bearing ball-shaped fruit about two inches in diameter. It contains one of the deadliest poisons known.

Three things are absolutely necessary to your health—periodic doses of quinine or atabrine, the use of some sort of mosquito protection, and daily doses of salt or salt tablets to replace the salt removed from the body by excessive sweating.

Take the first dose of atabrine (one tablet) in the morning, and the second dose (one tablet) in the evening on the first day you are in the jungle. Skip three days, then repeat the doses as on the first day. Keep this up as long as you are in a malarial area. (This dosage for one and a half grain atabrine tablets.)

If quinine is in the jungle kit instead of atabrine, take two five grain tablets each day, as long as you are in a malarial area.

Dysentary caused by impure drinking water or food can be avoided by purifying all drinking water and by eating only food which has just been cooked or taken from a sealed container. If you become ill with dysentary, take only liquid foods and stay as quiet as possible until you are well. Add two salt

tablets to each canteenful of your drinking water.

If your first aid kit contains sulfaguanadine tablets take four tablets every four hours, day and night, until your bowel movements are normal. If there is no improvement in four days, stop taking the tablets.

Ticks, fleas, body lice, mites or chiggers, kissing bugs and botflies carry serious diseases or cause painful sores. Leeches and vampire bats (only in South America) also are dangerous.

Remove your clothing twice a day and inspect it and your body for any trace of vermin.

Ticks can be identified by their flat oval body, small head, and comparatively large abdomen. They are carriers of relapsing fever and typhus.

Never squash a tick on the skin or attempt to pull it out. Instead, cover it with a good coating of spit. The tick will free itself and be easy to remove. If you try to pull the tick out, his mouth will be left under your skin. Apply iodine to the bite.

Avoid native huts and use your insect repellant.

With the exception of those in New Guinea and in parts of Assam, there are few dangerous jungle natives. When you encounter natives, try to appear confident but not aggressive. Stay away from the women. All natives are superstitous and suspicious. You can only win their confidence by appearing open handed.

Be particularly careful of your treatment of natives if you are in or near enemy territory. They can help you get back to your lines. Don't try to use terrorist methods.

Eat native food only when it has been well and freshly cooked and be sure all water offered you by natives has been boiled. Under no condition sleep in or near native camps or bathe in nearby streams. Avoid close contact with any native. Don't go around barefoot. — Condensed from *Flying*, July, 1944.

Helicopter in Quantity Production

Of the scores of helicopters in experimental hangars, on drafting boards and in engineers' minds, one is now in actual production in this country. This is the Sikorsky R-4 helicopter, which is being built for the Army Air Forces by the Sikorsky Aircraft division of United Aircraft Corporation at Bridgeport, Conn., on what is probably the only helicopter production line in the world. Having completed the first Army contract for thirty YR-4 service test models, the company is now turning out R4-B production models in quantity under a second contract.

Already in service with the U. S. Army, Navy and Coast Guard and the British Royal Navy, the R-4 is a two-place helicopter, powered by a 180-horsepower Warner engine driving a three-bladed constant speed rotor. This main rotor has a diameter of 38 feet and makes about 220 revolutions a minute. A second rotor, which is one fifth as large and turns five times as fast, is installed at the rear of the fuselage to counteract torque. The R-4 has a net weight of 2,011 pounds, can carry a useful load of 520 pounds, and has a cruising speed of 85 to 90 mph.

Sikorksy Aircraft has also built experimental models of two improved helicopters, the XR-5 and the XR-6. The XR-6 is a newer, more streamlined version of the R-4. Its fuselage is conical in shape, and its cabin is made of one piece of molded plastic glass, with the instrument board installed low and at an angle, thus providing almost perfect visibility for the pilot and observer. With a 245-horsepower Franklin engine, the R-6 has a cruising speed of more than 100 mph., can carry a heavier load than the R-4 and can fly to altitudes well above our highest mountain ranges. On the longest nonstop flight ever made in a helicopter, from point of view of both distance and time, the XR-6 flew 387 miles from Washington, D. C. to Dayton, Ohio, last March, consuming only 68 gallons of gasoline—and against headwinds of from 10 to 30 mph.

With a 450-horsepower Pratt & Whitney engine, the R-5 is about twice as powerful as its sisters and about twice as big. Its main rotor, also three-bladed, is the largest ever used on a helicopter, having a diameter of 48 feet. Its cruising speed is more than 100 mph. and its useful load is much greater than that of either the R-4 or the R-6. The seats are arranged in tandem, making possible a narrower fuselage and affording the observer in the front an almost unobstructed view.

The R-4 now on the assembly lines is built in two main subassemblies—the front section and the rear section. These move toward each other from opposite ends of the first assembly line and converge in the center of the building, where they are joined together and the engine is installed. Unlike most conventional airplanes, the Sikorsky helicopter has its engine in the middle of the machine near the center of gravity, thus improving its stability. On the R-4 the engine is located in front of the rotor but on the R-5 and R-6 it is directly under it.

Moved to the second and final assembly line, the fuselage, which is of tubular steel construction, receives its fabric and aluminum alloy covering and final installations, including landing gear. The landing gear on the R-4 has a hydraulic shock absorber with a column of oil about two feet high and, jutting way out to the side, is attached to the fuselage by five steel spars. The landing gear on the R-5 and R-6, however, have spring shock absorbers attached to the fuselage at an angle and present a much cleaner appearance.

After the final coat of paint is applied, the big main roto-blades are installed. Made of wood of

some five or six different types, these are ribbed and have a fabric covering. They are so constructed that three motions are possible. The rotating of the blades provides the helicopter's lift, the biting or pitch controls the speed, and a flopping motion provides flexibility which keeps the blades from breaking off. To prevent the machines from landing too hard, the blades are adjusted so that they can never reach an angle less than two and one half degrees.

Although the controls need constant attention, air currents are not so disturbing as in airplanes, and helicopters can fly in driving snowstorms and sixty-mile-an-hour gales.—Condensed from *U. S. Air Services*, July, 1944.

The following list shows the source from which each picture in this issue was secured. All pictures not credited are either official Marine Corps, or Navy photos.

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The article, "AOL-AWOL" appearing on Page 86 of the August issue originally appeared in the U. S. M.C. Headquarters Bulletin.

The article entitled "Will We Choose Naval Suicide Again" appearing on Page 85 of the August issue was written by Mr. James Forrestal.

The picture on Page 13 of the August issue is of Rapopo Airfield.

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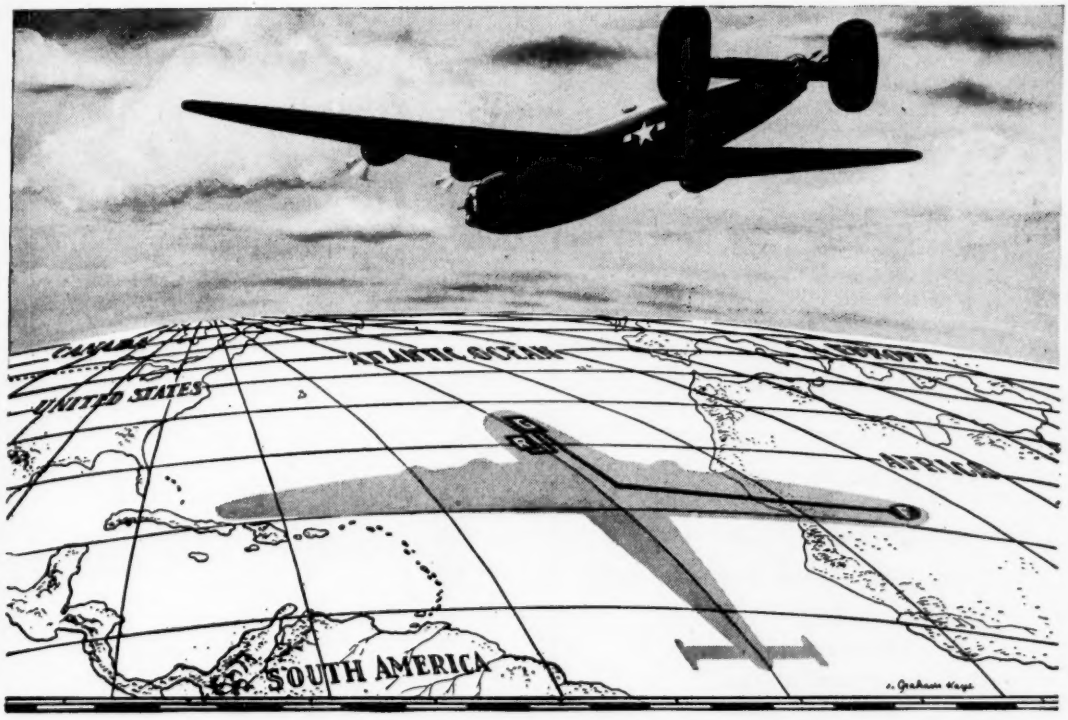

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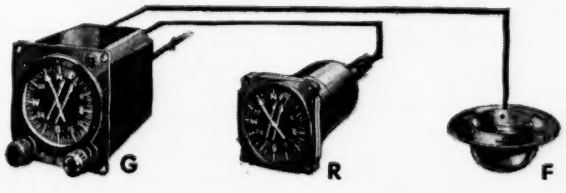
See diagram on shadow of airplane above.



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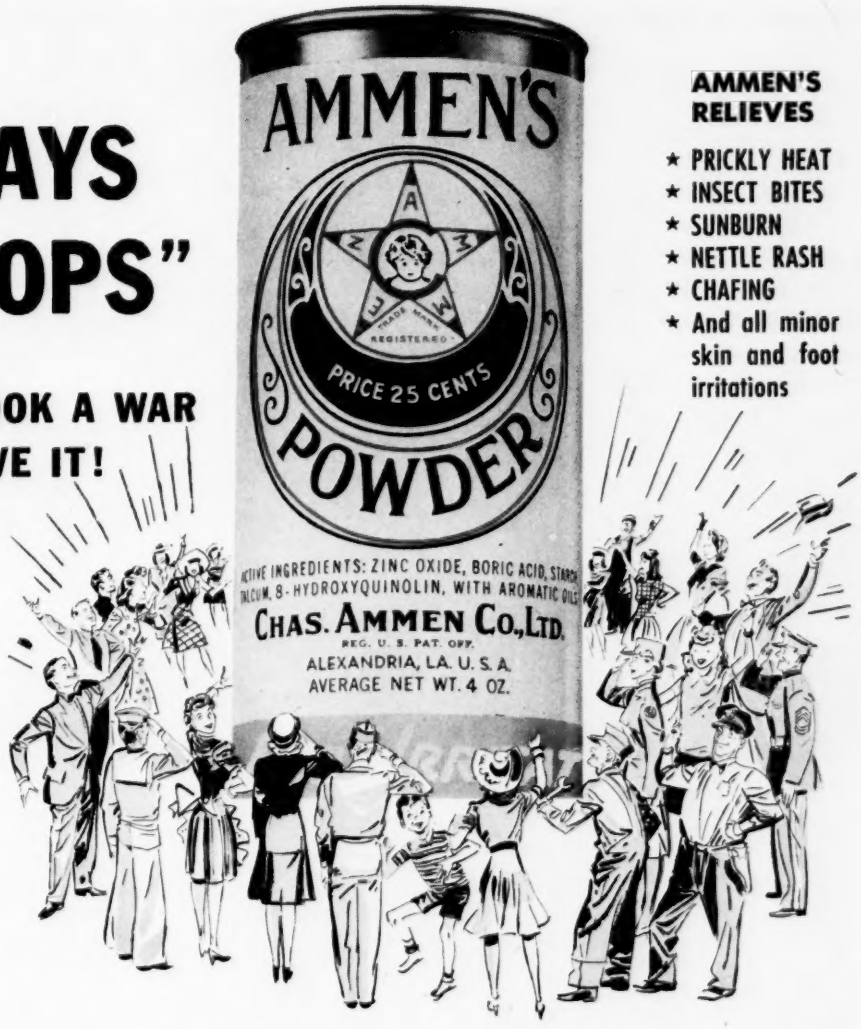
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Unretouched photo of agar cup plate test of Ammen's. Black area (6 to 7 mms) is zone in which germs can't live.

AMMEN'S

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Alone

We seven against the sea

Seven men . . .
And an unseen passenger
Who can't pull an oar
But can pull us through

He came aboard
When that small buoyant box
There on the after seat
Was fished out of the oily waters

His name is
"Intelectron"

* *

Inside the box
Is our hope
To live and sail again
For this box
Is a portable lifeboat radio transmitter
Bearing the name plate
Of I.T.&T.'s associate company
Mackay Radio

* *

We open the top . . .

Press a button . . .
And *"Intelectron"* goes to work
Tirelessly
Flashing an electronic beacon
An automatic SOS
Through the night
Even while we sleep

* *

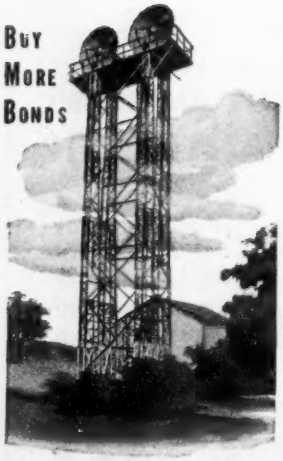
Alone?

Not with *"Intelectron"*
Standing watch

* *

These days *"Intelectron"*
Is serving in many ways
Via the equipment and facilities
Of I.T.&T.'s
Affiliated company
Mackay Radio
And its manufacturing associate
Federal Telephone and Radio

One of these days
"Intelectron"
Will serve as well
In the ways of peace



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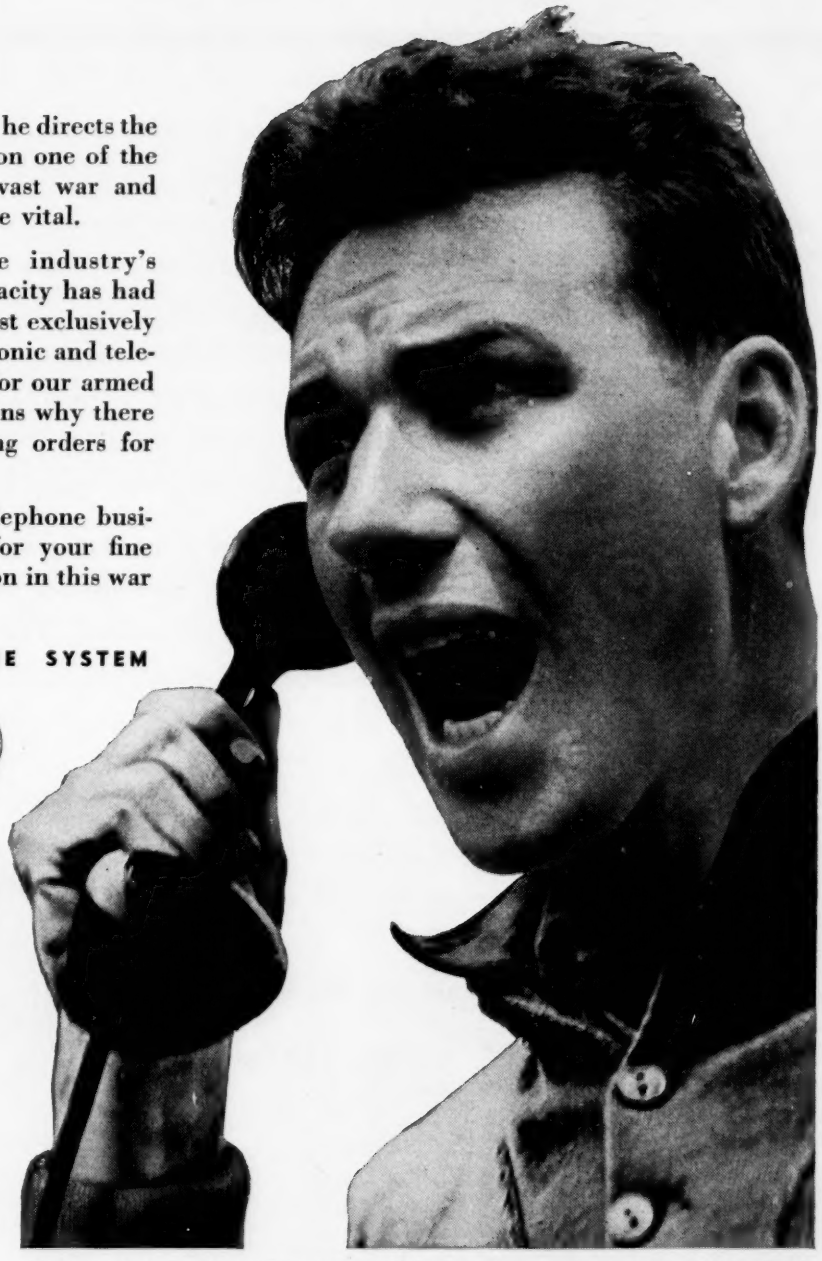
Please try to keep the Long Distance circuits clear from 7 to 10 each night for the service men and women.



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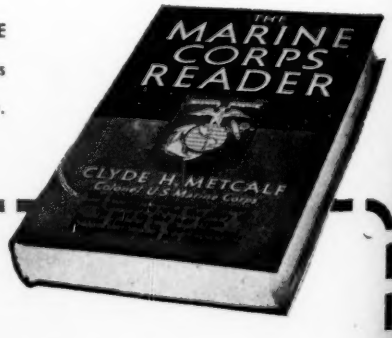

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